DECEMBER, 1935

COTTON

Serving the

TEXTILE INDUSTRIES

JAN - 3 1936

HOSIERY . . . UNDERWEAR
NEGLIGEE . . . OUTERWEAR
ACCESSORIES, *Durene*
SUCCESSFULLY ADDS
ITS WEARABILITY AND
COMFORT TO THEM ALL

DIXIE *Durene's* SUCCESS
IN VARIED LINES SUGGESTS
OPPORTUNITIES FOR YOU

DIXIE MERCERIZING COMPANY
CHATTANOOGA · TENNESSEE
DIXIE DURENE · A PRODUCT OF CONTROLLED MANUFACTURE

If all the yarn that has been dyed by the Franklin Process Companies were wound into one huge package, the latter would be about 258 feet high and 182 feet in diameter, or approximately as high as a 22-story building.

126,000,000 LBS. OF EXPERIENCE

Ten years to gain GENERAL recognition as the most ECONOMICAL dyeing method for cotton yarn dyed fancies. Perhaps five years more to gain general acceptance as a superior QUALITY method also. Such was the early history of Franklin Process Custom Yarn Dyeing (first offered to the textile industry in 1910) and such are the trials of any new, revolutionary product or service.

Contrast this early history with today's situation. Franklin Process is now a time tested, national institution, handling a large percentage of the cotton custom yarn dyeing in the United States (as well as a large quantity of rayon and worsted yarn dyeing); a proven sales asset as well as a manufacturing asset. Franklin Process Colors are now ordered or specified by manufacturers or converters without question and without considering the reasons for their choice. That is the eventual fate of all great achievements. In time they are taken for granted, with little appreciation of what made them possible.

However as a safeguard against ill considered color buying, it behooves the textile industry to ponder briefly the secret of Franklin Process achievement. Is the secret a patented process?

Custom Yarn Dyeing
Natural Yarns Colored Yarns
Glazed Yarns
Dyeing and Processing Machines

When you pay for colors of KNOWN fastness, advertise the fact. Use the Franklin Process Fast Color Label. Ask us about it.

good management? exceptional technical skill? or good merchandising?

The answer to all of these questions is "Yes, partly," but the story is far from complete, without mentioning the most important factor of all,—EXPERIENCE. Franklin Process has had 126,000,000 lbs. of experience (its total production from 1910 to 1934 inclusive). But even this figure does not tell the whole story; it does not include the countless experimental dyeings made in our laboratories, the many tests with different types of metals in our dyeing machines, with different machine designs, and with different dyeing materials and methods.

Consider these facts when buying colored yarns or yarn dyeing, for such experience is not to be taken lightly. It can not be duplicated overnight. Great achievements are always born of experience. Therefore if you want the best in yarn dyeing service, look to—

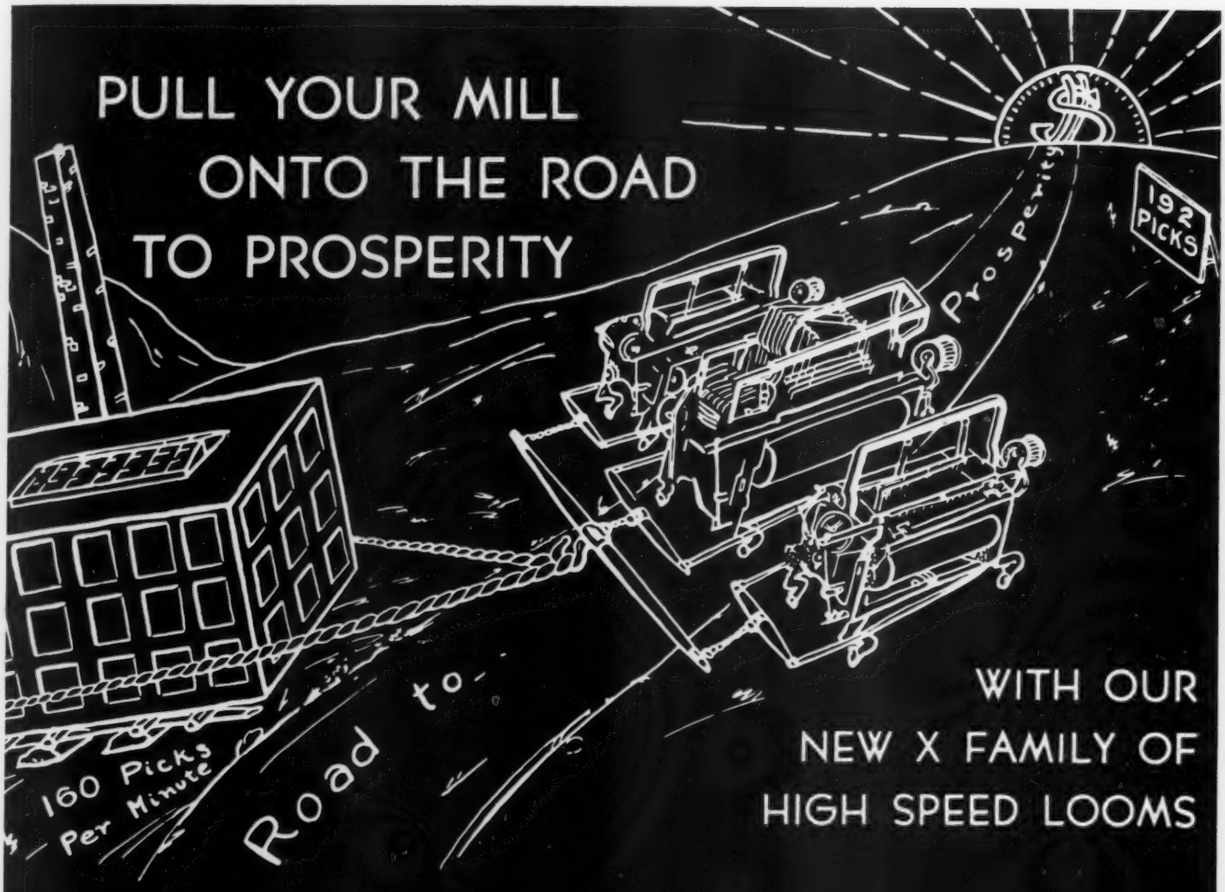
FRANKLIN PROCESS

ESTABLISHED 1910

Pioneers in Package Dyeing

PROVIDENCE • PHILADELPHIA • GREENVILLE • CHATTANOOGA • N. Y. REPRESENTATIVE, 40 WORTH ST.

COTTON is published monthly by W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga. Subscription Rates, United States and Possessions, $1.00 for one year; $2.00 for three years; Canada, $1.50 per year; Foreign Countries, $2.00 per year. Entered as second-class matter at the postoffice, Dalton, Ga., Under the Act of March 3, 1879.



You Can Run Ordinary E Model Weaves on a 40" X Model Loom at 192 Picks per Minute

You Can Weave Fine Rayons on a 42" X or XK Model Loom at 175 Picks per Minute

You Can Run a Wide Variety of Difficult Weaves from Medium Weight Corduroy to Broadcloth and Fine Lawns on the XK Model at Same High Speed

You Can Weave Broad Sheets on a 90" XL Model at 120 Picks per Minute

What Are Your Looms Doing?

DRAPER CORPORATION

Atlanta Georgia Hopedale Massachusetts Spartanburg S C

We keep BEARINGS *bearing up instead of bearing down!*

A bearing out of service means a machine out of production. By using the lubricant best suited to a particular operating condition, or type of bearing, you can minimize this hazard.

Through an interchange of ideas and constant contacts with bearing designers and manufacturers in addition to extensive scientific research in The Texas Company's own laboratories we have developed a complete line of tested and proved lubricants that fit exactly every bearing condition in your plant. Remember that the Texaco representative is trained to aid your men in the proper selection and use of the most effective lubricant for any condition. They will welcome his friendly, helpful cooperation because it means an opportunity for them to show new savings, and greater operating efficiencies.

THE TEXAS COMPANY
135 East 42nd Street • New York City

Nation-wide distribution facilities assure prompt delivery.

Texaco research specialists are constantly studying the problems of lubrication, developing new lubricants to meet new conditions. Let a Texaco representative tell you about this work and the benefits to your plant.

JUST A FEW EXAMPLES

1. Rolling Mill Bearings • Here heat and tremendous pressures play havoc with unsuitable lubricants. Texaco has solved this difficult lubrication problem for many of the country's foremost mills.

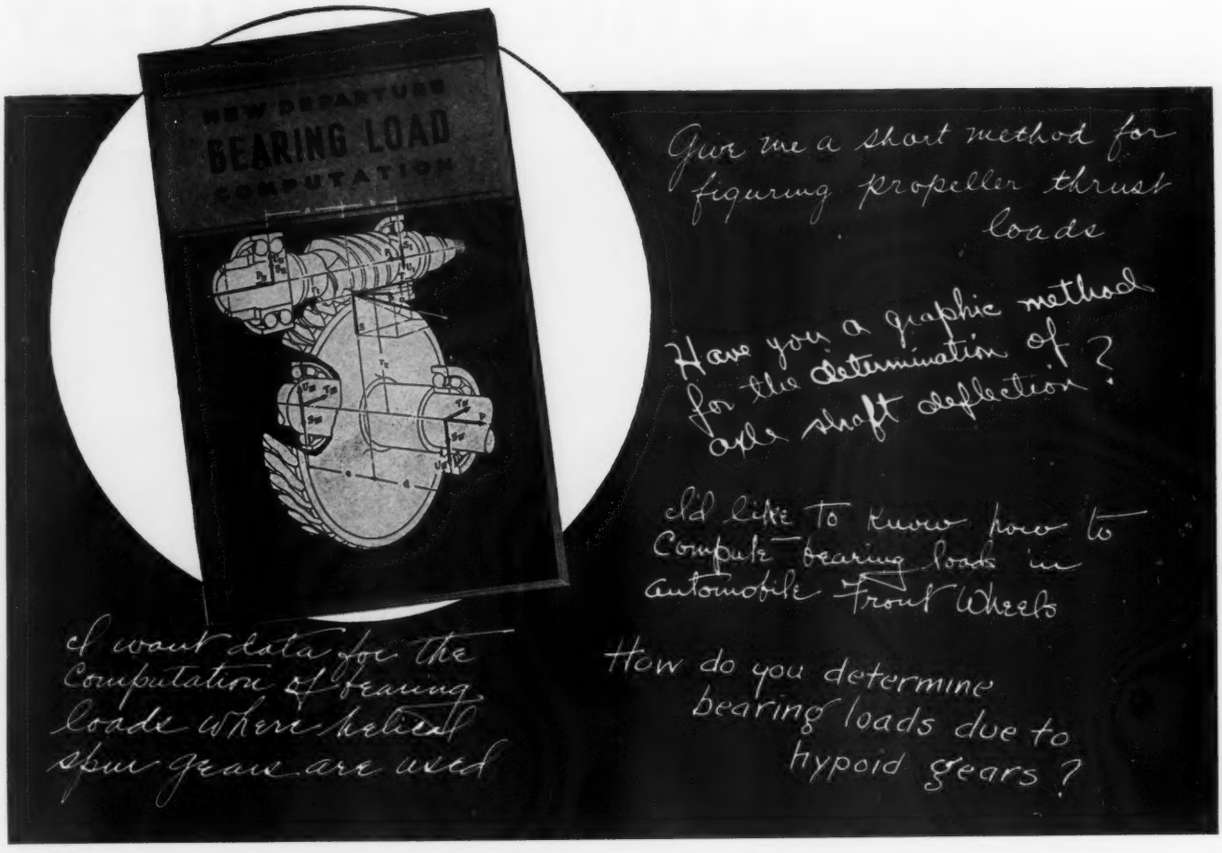
2. Paper Mill Bearings • The efficient lubrication of paper machines presents a wide variety of conditions requiring close specialized study. These bearings call for exacting attention to conditions of speed, pressures, moisture and temperature. There is a proved Texaco Lubricant exactly right for every bearing in the plant.

3. Textile Mills • Lighter bearings operating at high speeds seem a comparatively simple problem. Cotton spindles, for instance, represent just one of them. Texaco has developed a series of remarkably efficient bearing lubricants for textile mills. They have effected power savings in many plants.

TEXACO REG. T. M.

TEXACO *tested* LUBRICANTS

REFINERY TESTED FOR UNIFORMITY • • • SERVICE TESTED FOR ECONOMY


NEW DEPARTURE
BEARING LOAD
COMPUTATION
Give me a short method for figuring propeller thrust loads
Have you a graphic method for the determination of axle shaft deflection?
I'd like to know how to Compute bearing loads in automobile Front Wheels
I want data for the Computation of bearing loads where helical spur gears are used
How do you determine bearing loads due to hypoid gears?

DO YOU FIGURE BEARING LOADS?

— Then Here Is a Booklet You Need

NO matter what kind of machines you may be designing or what types of bearings you may plan to use, this booklet, with its perspective diagrams and convenient tables, will prove of real assistance. Methods used are the shortest consistent with accurate results. Send for your copy now. Simply ask for Booklet CL. . . . The New Departure Manufacturing Company, Bristol, Connecticut. World's Largest Producer of Quality Ball Bearings, including the Seal type.

Also Manufacturers of TRANSITORQ — Infinitely Variable Speed Power Unit

TRADE MARK
TUFFER
REG. U.S. PAT. OFF.
CARD CLOTHING

SERVICE and DELIVERY ....saves costly delays

A mid-western mill writes, "The way you shipped the clothing separately for each card facilitated getting the clothing in the cards promptly, and all boxes were correctly and carefully marked. The delivery was made exactly on time. I am convinced that no other concern could have handled the order as you did."

Another mill reports, "I appreciate beyond words your special consideration and service."

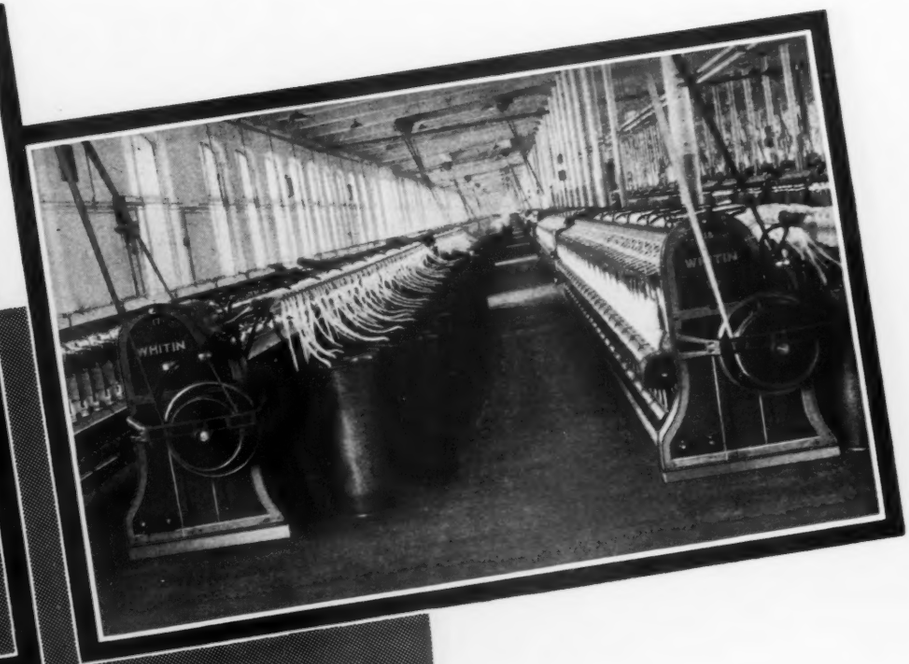
Our policy from the beginning has been to make a product which we would be proud to use ourselves, if we were running a textile mill. We try to keep an adequate stock of regular sizes and kinds of Tuffer Card Clothing in reserve for quick delivery. If a special size or kind is not in stock, every facility is exercised to manufacture quickly. Order from our nearest office.

HOWARD BROS. MFG. CO.

HOME OFFICE AND FACTORY: **WORCESTER, MASS.**

So. Plant: 244 Forsythe St., Atlanta, **Branch Offices:** Philadelphia, Dallas, Washington

Products: Fillets for Feed Rolls, Lickerins, Tumblers, Strippers, Workers, Doffers, Fancies, and Cylinders, Doffer Rings, Napper Clothing, Strickles, Emery Fillets, Burnisher Fillets, Top Flats Recovered and extra sets loaned, Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant. Midgley Patented Hand Stripping Cards and Inserted Eye and Regular Wire Heddles



Undisputed Leadership!

The WHITIN-CASABLANCAS SLUBBER

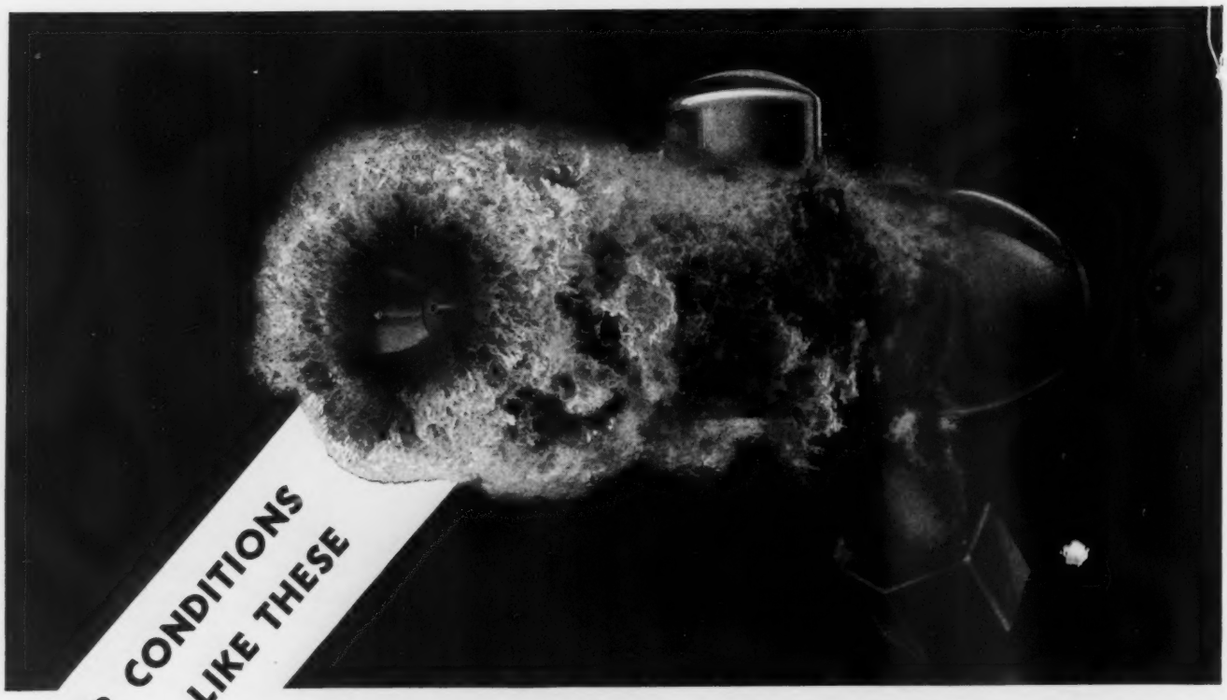
Standard Long Draft Roving System for Coarse Yarn Numbers

Twenty-Six Thousand Spindles in successful operation in this country. ● Feeding more than a quarter of a million Spinning Spindles.

No machinery investment you can make today will PAY for itself so quickly!

WHITIN MACHINE WORKS

CHARLOTTE, N. C. WHITINSVILLE, MASS., U. S. A. ATLANTA, GA.



AUTOMATIC SELF CLEANING

Means a Lot

Consider These Points . . .

Better Spray

Automatically Self-Cleaning (both air and water nozzles)

No Drip—No Feathering Down

Improved Construction

Maintains full capacity delivery

Eliminates manual cleaning labor

No waste of power

This, gentlemen, is what some atomizers look like after a few months of actual operation. ✓ Fortunately this is an AMCO No. 4 Atomizer — *the first automatically self-cleaning atomizer.* Both air and water nozzles are automatically cleaned whenever the compressed air supply is shut off. ✓ In spite of severe working conditions under which this Atomizer has been operating you will notice that the nozzles and the smooth, concave, hemispherical surface around them are perfectly clean. Lint and fly cannot accumulate around the nozzles, instead they are swept away by the rapid, streamlined currents of induced air. ✓ This Automatically Self-Cleaning Atomizer offers new possibilities for more efficient humidification in new work or on present systems.

AMERICAN MOISTENING COMPANY

Established 1888

PROVIDENCE, RHODE ISLAND

ATLANTA, GA. • BOSTON, MASS. • CHARLOTTE, N. C. • GREENVILLE, S. C.

Another evidence of the progressiveness and leadership of the American Moistening Company in producing efficient humidification equipment for the Textile Industry.

CHECK UP ON THESE VITAL POINTS

before you decide what flooring material to use!

See why MFMA

NORTHERN HARD MAPLE

IS THE LOGICAL CHOICE FOR HEAVY USAGE FLOORS

COMPARISON quickly shows decided advantages in using Northern Hard Maple for floors. Every factor points to Maple.

Whether you're building a new mill or remodeling the old, the service records of Northern Hard Maple will *prove* what flooring is best for you to use. For in countless mills where flooring must fill many difficult requirements, Maple floors laid many years ago are still serving their owners with complete satisfaction.

Northern Hard Maple is tough-fibred, tight-grained, resistant to abrasion, lastingly smooth. Will not sliver, splinter or develop ridges—even when subjected to the wear of heavy, rolling trucks with steel casters. Hard Maple actually outwears stone!

It is warm, dry, resilient, comfortable beneath the feet. Reduces fatigue. Simplifies plant alterations—creates no dust injurious to the bearing surfaces of machinery. Treated with the new, penetrating heavy-duty finishes—Hard Maple is remarkably easy to keep clean and free from lint—requires only brushing. These penetrating finishes seal the surface, keep out dirt, resist soil stains, and eliminate scrubbing. They will not mar, scratch, or flake off and are non-slippery. Also available are preservative finishes with special resistance to dampness.

Whether you floor with blocks or strips—with or without pattern—over wood or concrete sub-floors, or over your present floor—Northern Hard Maple will provide a floor that endures and satisfies.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1794 McCormick Bldg., Chicago, Illinois

See our advertisement Sec., 15/50 in Sweet's. Let our service and research department assist you with your flooring problems. Write us.

Floor *with* Maple

The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods. This trade-mark is for your protection. Look for it on the flooring you use. **MFMA**

WRITE FOR "Grading Rules and Standard Specifications" for laying and finishing **MFMA** MAPLE floors, and plan now to enjoy the advantages and economy this finer flooring brings.

•

YOUR LOCAL LUMBER DEALER WILL SUPPLY YOU

with trade-marked MFMA Maple Flooring—product of the following manufacturers licensed to use the Association trade-mark MFMA:

Beck, August C. Company	Milwaukee, Wis.
Brown Dimension Company	Manistique, Mich.
Bruce, E. L. Company (Mill at Reed City, Mich.)	Memphis, Tenn.
Cobbs & Mitchell, Inc.	Cadillac, Mich.
Connor Lumber & Land Company (Sales Office, Marshfield, Wis.)	Laona, Wis.
Cummer-Diggins Company	Cadillac, Mich.
Farrin Lumber Co., M. B.	Cincinnati, Ohio
Holt Hardwood Company	Oconto, Wis.
Kerry & Hanson Flooring Co.	Grayling, Mich.
Kneeland-Bigelow Company	Bay City, Mich.
North Branch Flooring Co.	Chicago, Ill.
Northwestern Cooperage & Lumber Co.	Gladstone, Mich.
Oval Wood Dish Corp.	Tupper Lake, N. Y.
Robbins Flooring Company	Rhinelander, Wis.
Sawyer Goodman Company	Marinette, Wis.
Stephenson Company, I.	Wells, Mich.
West Virginia Pulp & Paper Co.	Cass, W. Va.
Wells, J. W. Lumber Co.	Menominee, Mich.
Wisconsin Land & Lbr. Co.	Hermansville, Mich.
Yawkey-Bissell Lumber Co.	White Lake, Wis.

ALDRICH SYNCHRONIZED SINGLE PROCESS PICKING

IS STILL THE LEADING SINGLE PROCESS SYSTEM IN USE IN AMERICAN COTTON MILLS.

The patented Aldrich Synchronizer turns out better laps because it controls the flow of cotton through the whole picker without overloading the evener, and without making it necessary to use a hopper or gauge box between the breaker and finisher sections.

With old style two and three process picking, good breaker laps made better finished work than poor breaker laps.

With new style single process picking the same thing is true.

The Aldrich System is a continuous process in which the lap is made evener and smoother by each successive beater and screen section in the picker.

The Aldrich System does not tear up the breaker lap and then make another breaker lap for the cards.

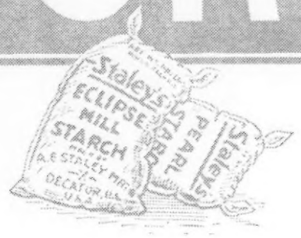
The Aldrich System makes the best possible finished lap out of the best possible breaker lap.

It can not only be applied to two and three process pickers, but to other types of less efficient single process machines.

AldricH MachinE

Greenwood, **WorkS** South Carolina

UNIFORMITY



A Valuable Ingredient You'll Find in EVERY Bag of Staley Starch

When one batch of size mixture produces perfect results and the next batch produces shedding or takes longer to cook and is not transparent—then comes the realization that one of the most important and necessary ingredients in starch is UNIFORMITY.

A bag of Staley Starch may look the same as any other high grade starch but not so visible are the UNIFORM RESULTS you will ALWAYS find in EVERY bag, day after day, month after month, year after year.

Every bag of Staley's has the same uniform, clean, quality, without lumps and with the same fluidity. Every bag saves valuable time in preparing perfect size mixtures. Every bag assures the same viscosity that prevents starting up difficulties each morning and eliminates clogged pipe lines. Every bag produces a size mixture with the same perfect penetrating qualities and assures absolute nonshedding and transparency. Every bag produces a size mixture that will give the same "feel" as another mixture prepared a year from now. Unvarying warp yarn with smooth, flexible strength that weaves better and won't chafe is certain when Staley Starch is used in the size mixture.

If you want perfect assurance that this valuable invisible ingredient is in every bag of starch you get, depend on STALEY.

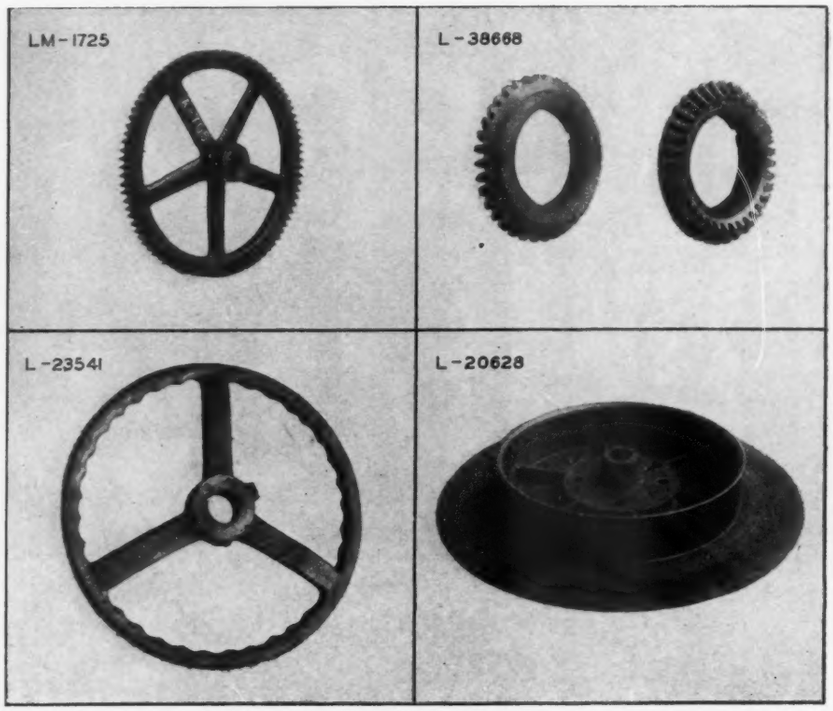
Our laboratories are always at your disposal in helping you secure more efficient and economical sizing.

STALEY SALES CORP.
DECATUR, ILLINOIS

New York City
Boston
Philadelphia
San Francisco

Atlanta
Spartanburg
Chicago
Dallas

STALEY



The Wheels of Textile Progress Need These Parts

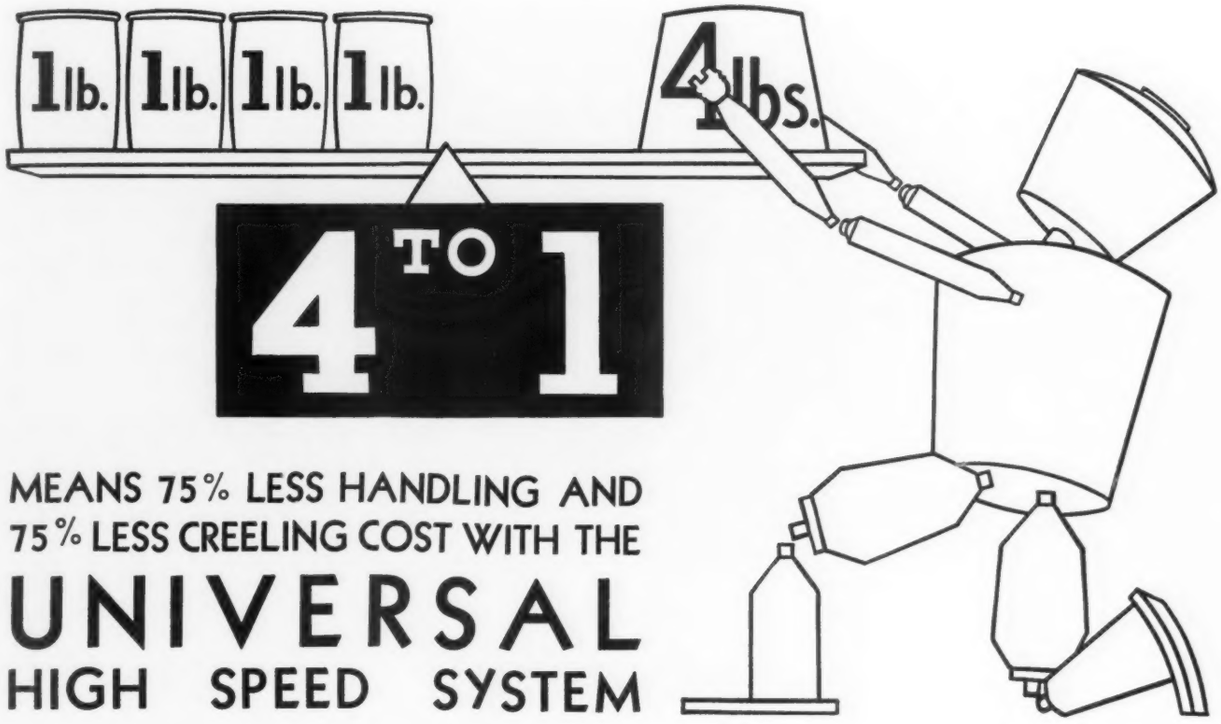
The progress of your plant depends, to a large extent, upon the smooth, efficient operation of your machinery. Failure of machines at frequent intervals not only intereferes with production but runs maintenance costs sky-high.

Keep the wheels in your plant running efficiently with machine parts that LAST. HENDERSON Repair Parts are not just ordinary replacement parts. They are made by textile experts with intimate knowledge of the weak points in present day textile equipment, and are stronger at the points that ordinarily break or wear. They are made from precision patterns so that they FIT accurately the machine for which they are intended. They are built to last longer under high speeds and strenuous operating conditions.

HENDERSON Repair Parts are helping to keep the wheels of textile progress turning efficiently. Let us quote you any part for any make of textile equipment.

HENDERSON FOUNDRY & MACHINE WORKS, HAMPTON, GA.

HENDERSON
TEXTILE REPAIR PARTS



MEANS 75% LESS HANDLING AND 75% LESS CREELING COST WITH THE

UNIVERSAL
HIGH SPEED SYSTEM

The large 4-lb. cone is one of the reasons why the Universal System of High Speed Coning and Warping offers mills changing from slow speed spooling and warping a ***25-75% net return on investment.***

This large cone takes the place of four small 1-lb. spools, allowing more time for productive work at the winder and saving 75% in the cost of trucking and creeling. The winder operator's productive time is also increased 25%-33⅓% as the result of uniform yarn speed.

Waste Eliminated, Inventory Investment Cut

Moreover, the wooden cones are handled more easily and last indefinitely. Yarn waste caused by broken spools and bad work caused by cracked spools, are eliminated. And inventory investment, both in respect to

YARN SPEED UNIFORM - ¼ TO ½ MORE PRODUCTION PER OPERATOR
HIGH SPEED
UNIVERSAL WINDERS
YARN SPEED VARIES - OPERATOR LOSES MUCH TIME WALKING
LOW SPEED SPOOLER

stock in process and to spools, is greatly reduced.

Weave Room Savings, Better Weaving

Further savings and improvements are made in the weave room. Spooler kinks are eliminated because the winder operator has both hands free to tie knots. The yarn's natural elasticity is retarded, because the uniform yarn speed permits minimum tension. And the electrically-controlled stop motion and powerful brakes on the warper prevent lost and crossed ends in the loom beam.

In three out of four

Finally, the Universal System has the lowest investment cost, lowest depreciation over the life of the machines, and lowest maintenance cost. And, in 3 out of 4 mills, the net return—even without considering inventory savings and weave room improvements — will be greater than with any other high speed system.

IN 3 OUT OF 4 MILLS MORE NET RETURN

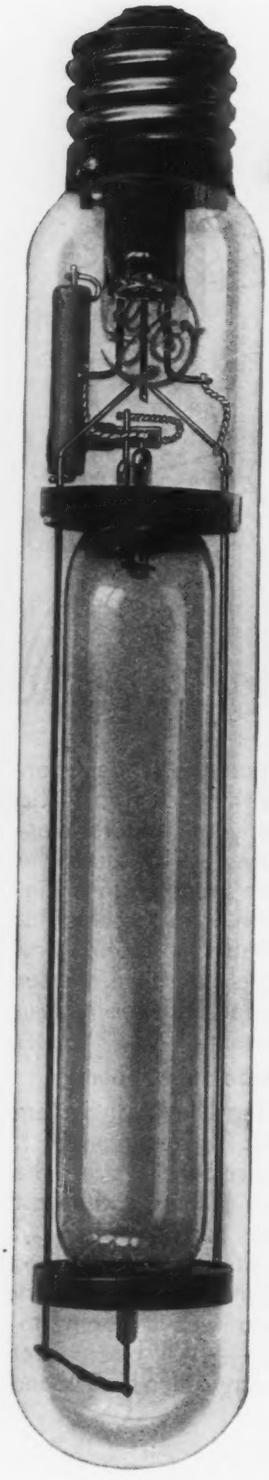
Universal System of High Speed Coning and Warping

UNIVERSAL WINDING COMPANY

BOSTON

NEW YORK · PHILADELPHIA · PROVIDENCE · SPRINGFIELD · UTICA · CHARLOTTE · ATLANTA

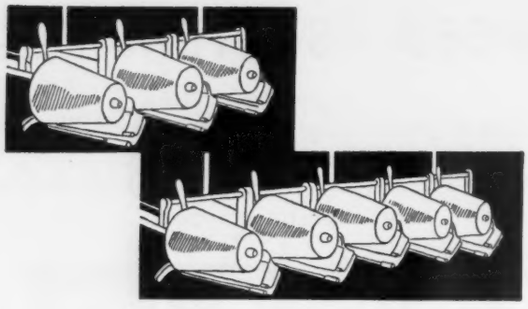
2516



Faster,

MORE ECONOMICAL PRODUCTION

with this intense white light



Speed up production by improving your lighting. Make it easier for workmen to see every individual thread. Make it possible for them to tie broken ends quicker, to save time in threading reeds, and to perform other operations where *their* time means *your* money. The General Electric High Intensity Mercury Vapor Lamp provides the quality of light that penetrates into all corners, that makes shadows luminous, and makes production truly economical.

The slightest variation in color shading is immediately apparent under this illumination. Men can work long hours under the General Electric High Intensity Mercury Vapor Light without that costly end-of-shift let-down in efficiency due to eye-strain. Higher efficiency per man-hour means higher profits for the owner.

Write for the new booklet describing this detail-revealing light. Address the General Electric Vapor Lamp Company, 853 Adams Street, Hoboken, New Jersey.

GENERAL ELECTRIC VAPOR LAMP COMPANY

662 Copr. 1934, General Electric Vapor Lamp Company

Order your auxiliary devices which were designed especially for this lamp from the General Electric Vapor Lamp Company.

HIGH INTENSITY *Mercury Vapor Lamp*

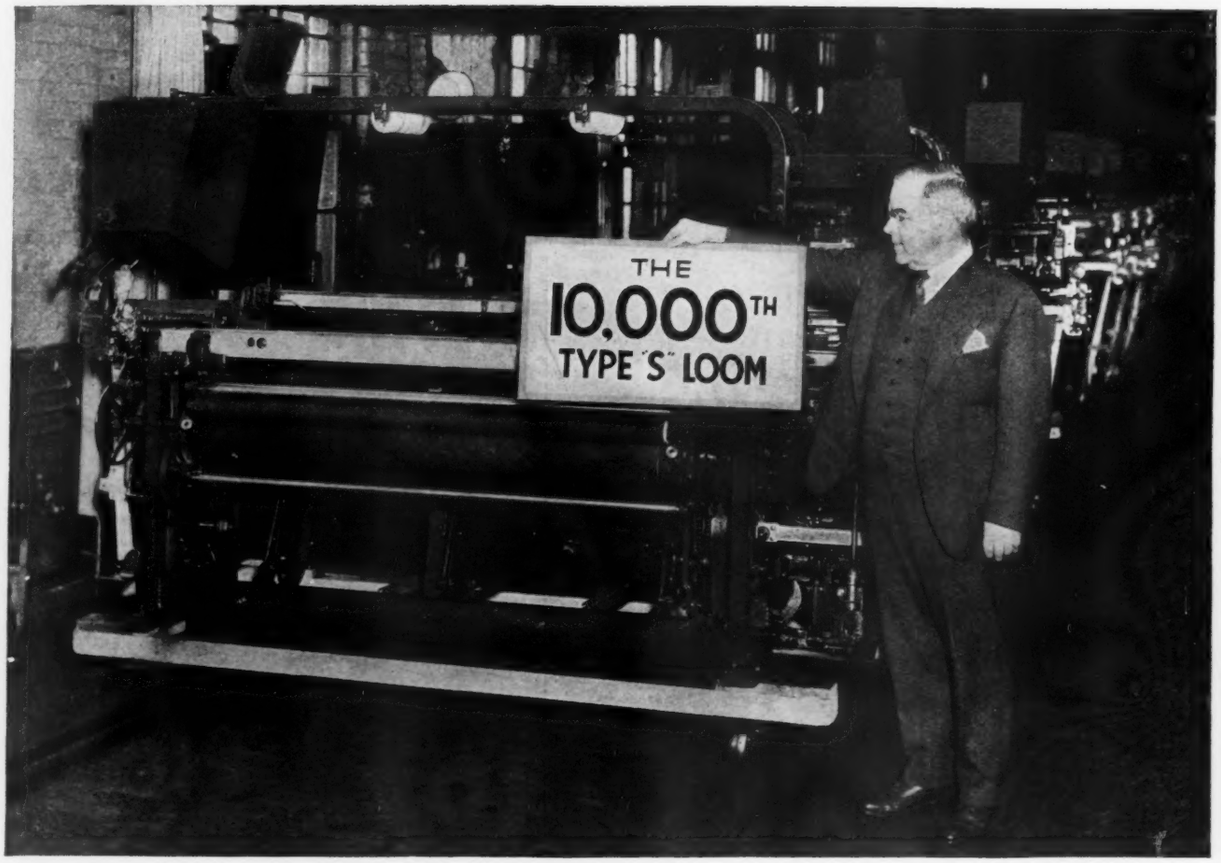


PHOTO TAKEN NOV. 5, 1935

10,000 Type "S" Looms are now in operation . . .

To us this is something of an event. The very fact that ten thousand C & K Type S Looms have been bought by the industry in the four years since they were first offered is, in our judgment, the highest kind of testimonial. There have been 82 United States and 25 foreign purchasers with one concern reordering as many as 15 times. Had not these looms done everything claimed by us, no such record of sales could have been made.

DISTRIBUTION

New England	1905
Pa., N. J. and N. Y.	2153
	4058
Southern States	5082
Foreign Countries	860
	10,000

DATA ON HARNESS MOTIONS

LOOMS BUILT WITH:

Intermediate Head	2144
Dobby	6751
Cone	736
Jacquard	132
Cam	237
	10,000

CROMPTON & KNOWLES LOOM WORKS

Allentown Philadelphia **WORCESTER, MASSACHUSETTS** Southern Office, Charlotte, N. C.

CROMPTON & KNOWLES JACQUARD & SUPPLY CO., PAWTUCKET, R. I.

FOR MAXIMUM SAVINGS FROM NEW HIGH SPEED LOOMS

..Specify Westinghouse Drive

★1 *The Westinghouse high-efficiency loom motor is built extra strong to withstand high-speed loom service. Excessive humidity will not damage the windings —they are triple-impregnated.*

★2 *The WK-18 Loom Motor Starter guards the motor against overloads. It is safe and positive in operation under high humidity conditions.*

Weave Room in a large Georgia mill, using Draper Model X, 40" looms equipped with Westinghouse Drives.

Users of modern, high-speed looms equipped with Westinghouse motors and control get maximum weaving economies right from the start.

They get ample reserve capacity for all loads and for smooth operation during breaking-in periods.

They get high-efficiency motor performance . . . maximum power from every watt they pay for.

They also get *positive lubrication* that cuts down oiling costs . . . exceptionally *low maintenance* because every detail of bearings, windings and rotor is designed for dependable operation . . . exceptionally *long life* because Westinghouse motors and control are sturdily built of high quality materials generously used.

Westinghouse Loom Drives are especially designed for the new high-speed looms, such as Draper models C, X, XK, XL and Crompton & Knowles models C3, C4, S3, S4, W2 and W3. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

R 61009

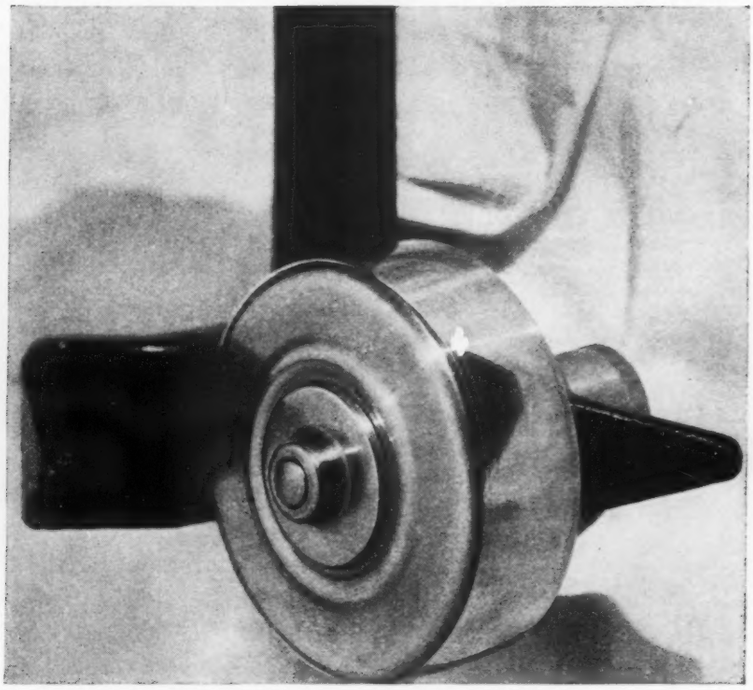
Westinghouse LOOM DRIVE

New—The SKF Tension Pulley

IT KEEPS ROLLING

In Spinning And Twisting Frames

● **SKF makes practically *all types of anti-friction bearings.* When SKF recommends a particular type of bearing, therefore, you may depend upon it; its recommendations are *unbiased!***



THE SKF TENSION PULLEY

With every achievement in the textile industry, SKF is ready to meet problems of speed, quality and load. For SKF keeps pace with progress, not only making a good machine better, but improving textiles as well.

Years ago SKF began to equip cylinders with ball bearings . . . and, again, SKF provided the Roller Bearing Spindle to insure the highest speeds on spinning and twisting frames.

Now SKF presents the tension pulley, the answer to the mill man who is troubled with slack twist . . . tapes falling off when frames start . . . lost power . . . and other setbacks caused by pulleys running on wooden bearings. Here's a pulley of rugged construction . . . simple . . . with an SKF high quality bearing in one of the most vital parts of the frame.

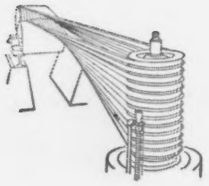
And remember this: it isn't a question of how much a frame costs when you buy it. It's the cost of keeping it up . . . and keeping it going . . . that really counts. Permit our representative to tell you about this tension pulley by writing direct to SKF INDUSTRIES, INC., Front St. & Erie Ave., Philadelphia, Pa.

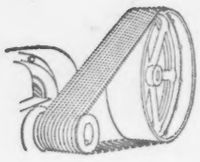
SKF

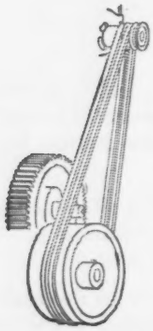
BALL AND ROLLER BEARINGS 3339

Save V-Drive dollars WITH THIS SIMPLE PATENT

the Concave Side







Make this test, yourself! Take *any V-belt* in your hands and bend it as it bends in going around a pulley.

You will find that the *top,* being under tension, grows *narrower.* The bottom, under compression, *widens.* Figure 1 (on the right) shows the shape-change that this produces in a *straight-sided* belt. Note the out-bulge of the sides.

Now look at Figure 2. There you see how the patented *concave* side *precisely corrects* this shape change. The concave side merely *straightens* to an *exact fit* in the sheave groove. This *saves* money in two ways: (1) No out-bulge at the side means uniform wear, *longer life!* (2) Full side-wall grip on the pulley holds heavier loads without slippage!

The Gates Vulco Rope Drive is the *only* V-belt built with the patented concave side.

WHAT HAPPENS *When a* V-Belt **BENDS**

Fig. 1. *Straight-Sided Belt*

Fig. 2. *Belt with Patented* CONCAVE *Side*

THE GATES RUBBER CO.
Factory Branches:
Terminal Bldg.
HOBOKEN, N. J.
1524 So. Western Ave.
CHICAGO
747 Warehouse St.
LOS ANGELES
2213 Griffin St.
DALLAS
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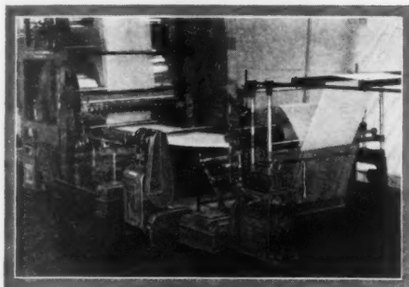
Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

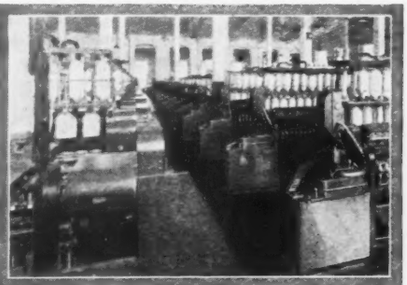
★ ★ ★

LOOK TO REEVES FOR *Accuracy* IN SPEED CONTROL



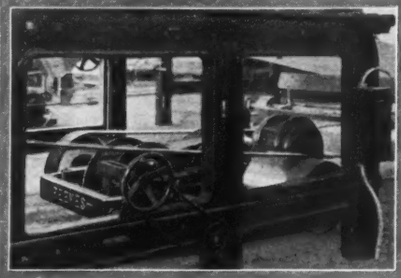
Close up view of REEVES Variable Speed Transmission, with individual motor drive, applied to slasher. Permits selection of exactly the proper rate of yarn travel over cylinders to match every changing requirement. Insures pliable, elastic warp because speed variation provided is infinite, instant, accurate and positive.

(Below)



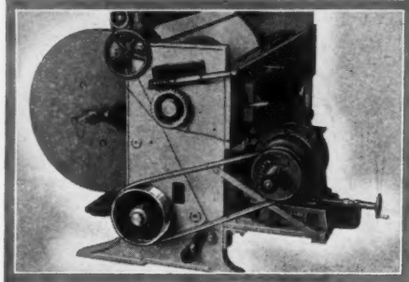
(Above)

Perfect synchronization of speeds must be maintained on this Sanforizing unit to insure uniform tension on cloth as it passes from one section to another. Two REEVES Variable Speed Transmissions do it. Any cloth speed—from 20 to 100 yards a minute—is maintained *with precision* throughout entire range.



(Above)

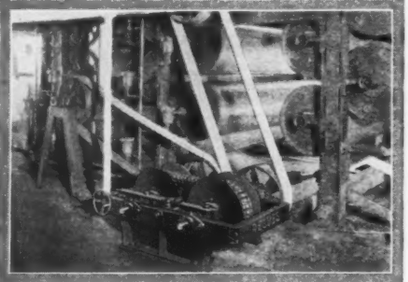
Typical mill installation of REEVES Spinning Frame Drives on filling frames. These sensitive Drives automatically maintain uniform tension and twist on yarn from empty to full bobbin, giving more uniform yarn, higher breaking strength and faster production. Automatic controls for filling, combination or warp build.



(Above)

A REEVES Vari-Speed Motor Pulley is used to vary speeds on this new Rayon Warper. Applied directly to extension of standard motor shaft, this simple, compact REEVES unit provides any speed over 3:1 ratio. Speed changes effected by turning convenient handwheel control.

Vertical enclosed design REEVES Transmission—one of many modern units in the complete REEVES line.



(Above)

Any slippage in a speed control device regulating dry cans results in spoilage and cannot be tolerated. Hence the REEVES Transmission is used on this equipment. Speeds are instantly adjusted to meet accurately such variable factors as weight of cloth, moisture content, drying time.

ACCURACY in a variable speed control unit is absolutely essential in textile processes to insure smooth, fast, quality production. There must be *no* slippage—*no* fluctuation. And speeds must be infinitely and *accurately* adjustable.

Look to REEVES for absolute accuracy in variable speed control. REEVES Variable Speed Transmissions are sensitive, positive and accurate to fractions of an R. P. M. *over their entire range.* They maintain any speed setting as long as desired, without slippage and without fluctuation—no matter how fast or slow the speed or what the load. And their high transmitting efficiency conserves power.

In recognition of this accuracy and efficiency, most manufacturers of textile machines provide REEVES speed control units as standard equipment. REEVES Transmissions are also easily applied to machines now in service. Available in a complete line—a wide range of designs, sizes, speed ratios and controls (manual, electric remote or entirely automatic), insuring correct application for any requirement.

REEVES PULLEY COMPANY
COLUMBUS, INDIANA

Send information on applying variable speed control to textile machines as contained in your new Handbook T-35. (12-35)

Name .....

Company .....

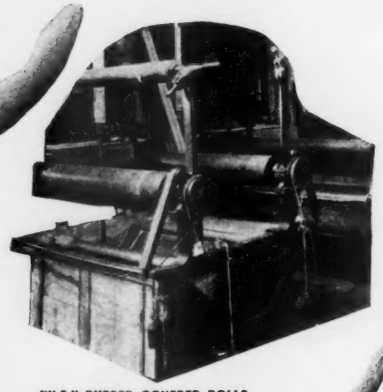
Address .....

U.S. RUBBER

IN THE TEXTILE INDUSTRY SINCE 1846

"U.S." has specialized in mechanical rubber equipment for the textile industry since 1846—and has always served the industry with products that reflect this experience in better performance and longer life.

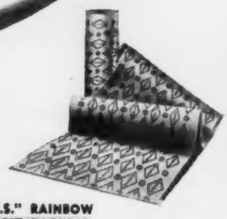
UNITED STATES RUBBER PRODUCTS, INC.
1790 Broadway New York, N. Y.



"U.S." RUBBER COVERED ROLLS
"U.S." Washer Rolls, Padder Rolls, Starch Mangle Rolls, Dye Jig Rolls and Squeeze Rolls are standard equipment in many of the leading textile mills of the country.

"U.S." RUBBER TANK LINING
For use in the storage of Bleach, Acids or Corrosive Materials, "U.S." Rubber Tank and Pipe Linings give satisfactory service.

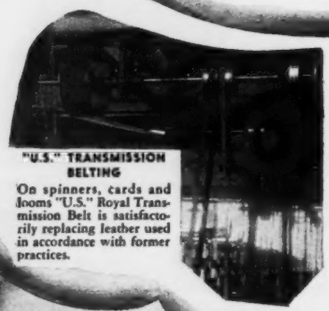
"U.S." AIR HOSE
For cleaning spinning frames, there is no better, no more longer lasting or more easily handled air hose made than "U.S." Rainbow.



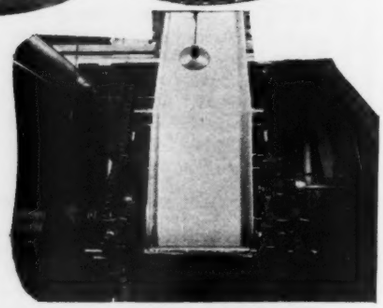
"U.S." RAINBOW SHEET PACKING
Pack one joint or flange in your plant with "U.S." Rainbow; but be sure it's Rainbow. Unless it bears the name Rainbow it isn't genuine.

"U.S." FIRE HOSE
"U.S." Security Mill Hose is made with the highest quality calendered rubber tube and long-fibre cotton woven fabric, protected chemically against mildew and rot.

"U.S." WIRES AND CABLES
A complete line of wires and cables. "U.S." Royal Portable Cord for every type of portable electrical equipment . . . extremely flexible, non-absorbent, highly abrasion-resistant.



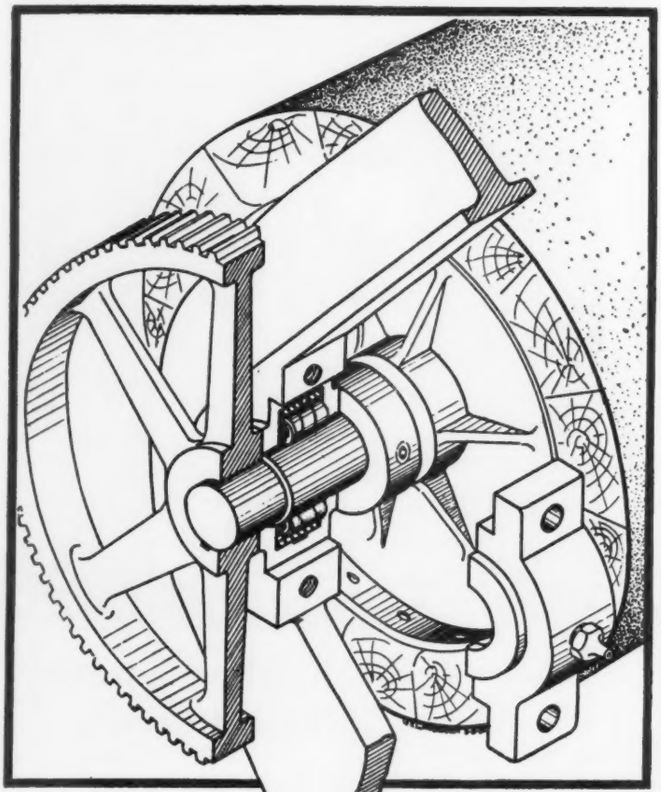
"U.S." TRANSMISSION BELTING
On spinners, cards and looms "U.S." Royal Transmission Belt is satisfactorily replacing leather used in accordance with former practices.



"U.S." RUBBER BLANKETS
"U.S." Mackintosh Blankets, with smooth joint, eliminate seam marks—an outstanding success in textile printing of difficult, fine patterns.

United States Rubber Company

Preventive Medicine.... Permanent Cure



TAKE-UP DRUM

When necessary to "let back," unless the take-up drum moves freely, start marks will appear on the cloth being woven. Hyatt bearings on drum shaft insure positively that "let back" will occur pick by pick.

By their easy rolling motion, Hyatts cause the take-up drum to advance evenly pick by pick.

GREASE IT ONCE A YEAR AND FORGET IT

X-RAYS were not discovered until 1895.

Hyatt Roller Bearings were not invented until 1890.

The automatic loom did not come into being until 1889 although weaving is an ancient art.

Today every modern clinic uses the X-ray to seek hidden troubles.

Every modern machine today employs roller bearings to cure bearing troubles.

Yet automatic looms, invented nearly a half century ago, in many instances, still use troublesome plain bearings.

Why stick to this obsolete practice? Be guided by the methods of modern clinics. Keep in step with modern machine design. Prevent the start of trouble and cure the cause of trouble.

Hyatt Roller Bearings for your loom crankshaft, camshaft, rockershaft, dobby drive and the take-up are preventive medicine as well as permanent cure for bearing troubles. Specify them by name. Hyatt Roller Bearing Company, P. O. Box 476, Newark, N. J.

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

"Just Around the Corner"

AMERICA'S INDUSTRIES FIND CRANE STOCKS

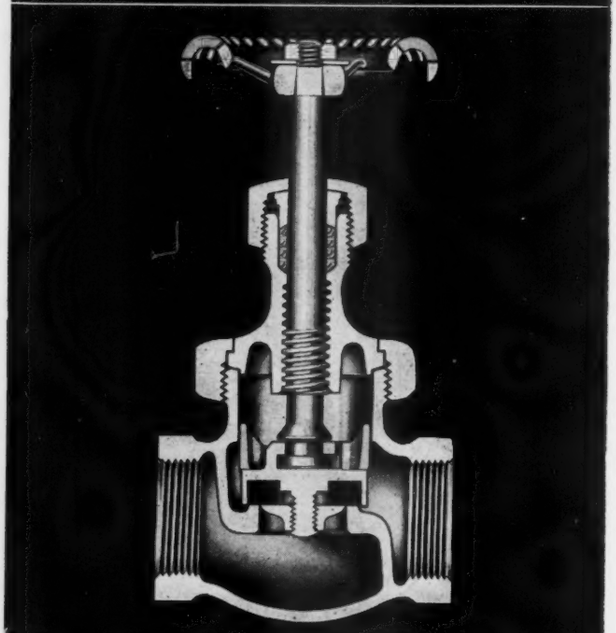
• Crane service in valves, fittings, and piping is a *localized* service. Within 24 hours of every factory in the United States, and within one to two hours of a great majority of them, complete stocks of Crane valves and fittings are available.

The Crane line is extensive, capable of answering the daily requirements of the 209,348 industrial establishments within the service areas where Crane stocks are carried.

Crane materials will help you solve any piping problem. If extensive modernization is contemplated, the Crane Finance Plan allows you to spread the cost over a period of years.

CRANE SHOP FABRICATION SERVICE
Design Flanging
Casting Cutting
Bending Threading
Welding Assembling
There is a Crane Valve or Fitting for every piping requirement

VERSATILE



Crane No. 7 All-Purpose Brass Globe Valve

1 An all-purpose valve, with various compositions of renewable discs available for your service condition.

2 Valves for steam service regularly fitted with CRANITE discs, an exclusive Crane disc.

3 A true union bonnet joint permits frequent and rapid disassembly of valves when necessary to renew discs.

4 An ideal valve for general industrial plant standardization.

5 Sturdily built of high grade materials and rated for 150 pounds steam working pressure.

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS • NEW YORK: 23 W. 44TH ST.
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CRANE VALVES, FITTINGS AND PIPE FABRICATION

NOT A THOUSAND - - - NOR A MILLION BUT

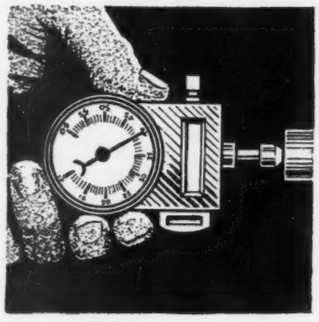
COUNTLESS SPEEDS

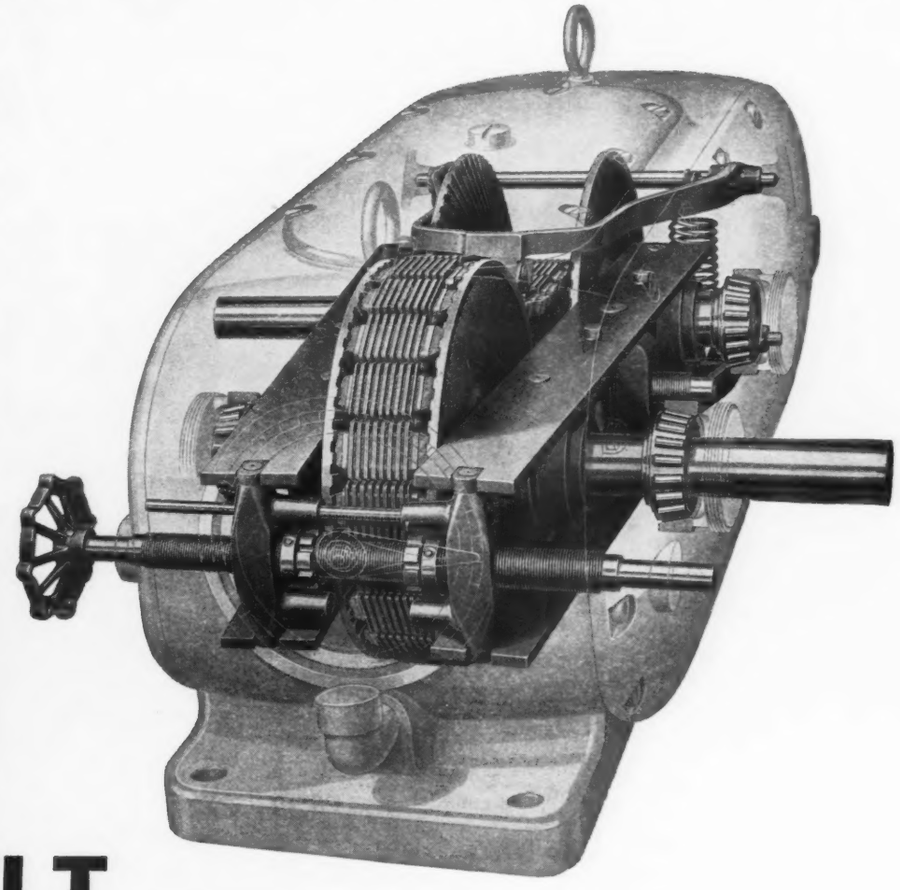
AT THE TURN OF A HANDLE

INFINITE variation—fractional - revolution speed changes made and maintained with micrometer precision . . . with the Link-Belt P.I.V. Gear.

Tooth-to-tooth contacts of its unique drive chain with conical wheels, do not permit slip.

Compactness and flexibility of application are other outstanding features of the P.I.V. Gear. It is now available for horizontal and vertical mounting of the basic unit; also motorized, and with gear reduction sets. Send for new Book No. 1574.





LINK-BELT P.I.V. GEAR

LINK-BELT COMPANY
The Leading Manufacturer of
Positive Power Transmitting Equipment

PHILADELPHIA CHICAGO
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SAN FRANCISCO TORONTO
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POSITIVE INFINITELY VARIABLE SPEED CONTROL

GRASSELLI *Formic* ACID frequently saves WASTE OF DYESTUFFS

● Good dyestuffs are too expensive to waste. Yet every ounce in the dye-bath that's not utilized simply means dollars lost down the drain-pipe.

Grasselli Formic Acid is often a definite economy because it exhausts the dye-bath completely. But that's not all; this effective exhaust agent not only effects measurable savings in dyestuffs but also produces bright, unclouded colors, level even in cross-dyeing. A trial will convince you.

Grasselli Formic Acid, 85% and 90%, is available in 120 lb. carboys from any of our branches listed below.

THE GRASSELLI CHEMICAL COMPANY, INC.
Founded 1839 **Cleveland, Ohio**

New York and Export Office: 350 Fifth Avenue

Albany, Birmingham, Boston, Charlotte, Chicago, Cincinnati, Detroit, Milwaukee, New Haven, New Orleans, Philadelphia, Pittsburgh, St. Louis, St. Paul
San Francisco, 584 Mission Street
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TEXTILE MILLS—
Let us also quote you on

Acetic Acid
Acetate of Soda
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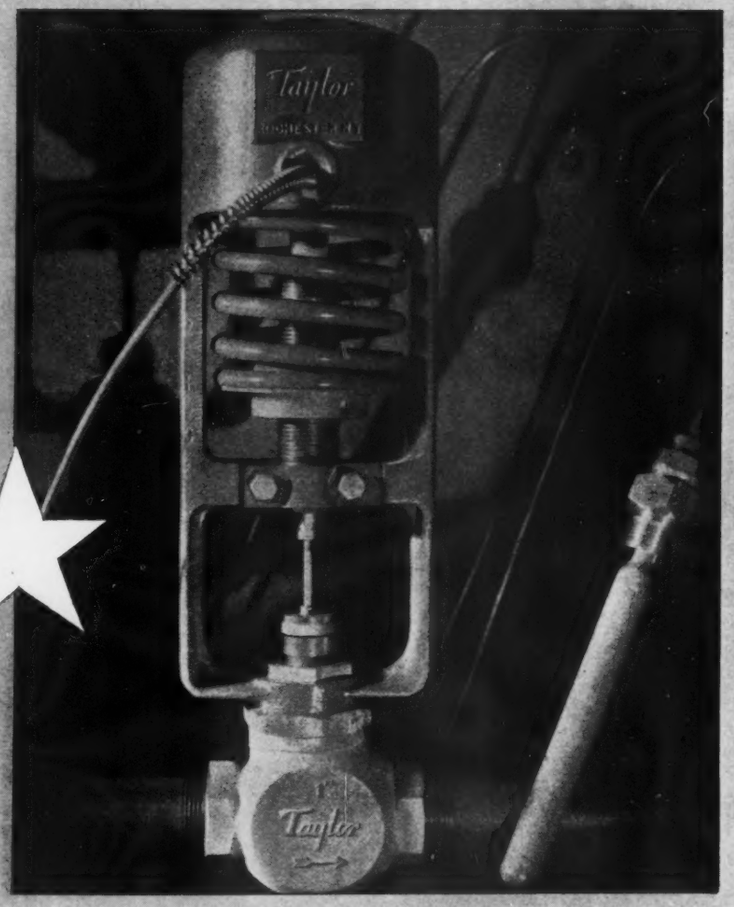
Alums, U. S. P.
Aqua Ammonia
Barium Chloride
Bi-Chromate of Soda
Bi-Sulphate of Soda
Bi-Sulphite of Soda
Carbonate of Soda
Caustic Soda Solid and Flake
Chloride of Lime
Chloride of Zinc
Epsom Salts
Glauber's Salt
Lactic Acid
Muriatic Acid
Nitric Acid
Oxalic Acid
Phosphate of Soda
Silicate of Soda
Sulphate of Alumina
Sulphate of Soda, Anhydrous
Sulphite of Soda
Sulphide of Soda
Sulphuric Acid
Tri-Sodium Phosphate

GRASSELLI DU PONT

gives a very complete exhaust of the dye bath

PUT THIS VERSATILE STAR on your CONTROL PAYROLL

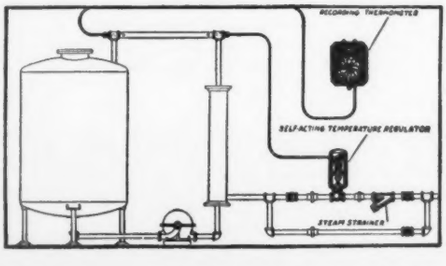


Taylor Self-Acting Temperature Controller adaptable to many uses where no auxiliary power is available for operation. An outstanding instrument for accurate, dependable and economical regulation. Reduces the "Dead Period" in control.

MORE and more mills today are finding use for this automatic, self-acting temperature control. The Kier Temperature Control System outlined on this page is only one of many places where this instrument fits perfectly. In a Soaper Control System and in connection with temperatures of dye baths, hot water tanks, wash water tanks and spray heads, it provides accurate, dependable control.

The superiority of the Taylor Self-Acting Controller lies in its superior power unit and its new anti-friction construction. This controller responds quicker to temperature changes, and is adaptable to a greater variety of applications because of its responsiveness. When a change in temperature at the bulb occurs, excessive friction prevents some valves from responding until the bulb temperature has changed several degrees. The change in bulb temperature before the valve responds is called the "dead period." In some instances this amounts to 10° F. In the Taylor Self-Acting Controller this period is reduced to slightly over 1°F.—an achievement that accounts largely for accurate, dependable performance.

This Controller provides practically uniform sensitivity throughout its entire range. An improved tube system insures longer life. Temperature adjustment is easy. Everything has been done to make this controller the outstanding instrument of its kind. Perhaps there are several places in your mill today where you need modern temperature control and cannot use an air-operated instrument. Let a Taylor Representative discuss the use of this Self-Acting Controller in connection with your complete control system. Familiarity with the problems of textile mill operation from slashing to finishing makes it possible for Taylor Engineers to help you with your specific problems or needs, whether they call for a single instrument or a specially engineered temperature control system. For this service in helping you maintain the quality of your goods and reduce the cost of making them, address Taylor Instrument Companies, Rochester, N. Y.; or Toronto, Canada. Manufacturers in Great Britain —Short & Mason, Ltd., London, Eng.



Just one example of the use of a Taylor Self-Acting Temperature Controller. Here it is part of a Taylor System for Controlling Kier Boiling temperature. The important thing about it for you is that such installations are engineered by Taylor to meet the specific needs of a particular mill.

• • •

Taylor

Indicating Recording Controlling

TEMPERATURE, PRESSURE and FLOW INSTRUMENTS

CUT COSTS—FROM SLASHING TO FINISHING

Dyers Lose no time trying

REDOXYVAT

The NEW DEVELOPMENT that brings REMARKABLE BENEFITS to Vat Dyeing

The following mill-proven advantages of REDOXYVAT in Vat Dyeing, tell their own story of unusual performance.

1. PREVENTS PREMATURE, OXIDATION or too rapid oxidation.

2. KEEPS VATS IN LEUCO STATE 3 TO 4 TIMES LONGER. In vats where the normal leuco state was several hours, they may now be maintained for 6 to 8 hours with Redoxyvat.

3. SMALL QUANTITY NEEDED. Amounts range from 10% to 20% on the *weight of the dyestuff.*

4. SAVES ON DYESTUFFS. The addition of Redoxyvat shows a definite saving in the amount of dyestuff needed.

5. BETTER COLOR VALUES are obtained because *every bit* of dyestuff is in the leuco state.

6. NO CROCKING EFFECT because all dyes are in a completely reduced state.

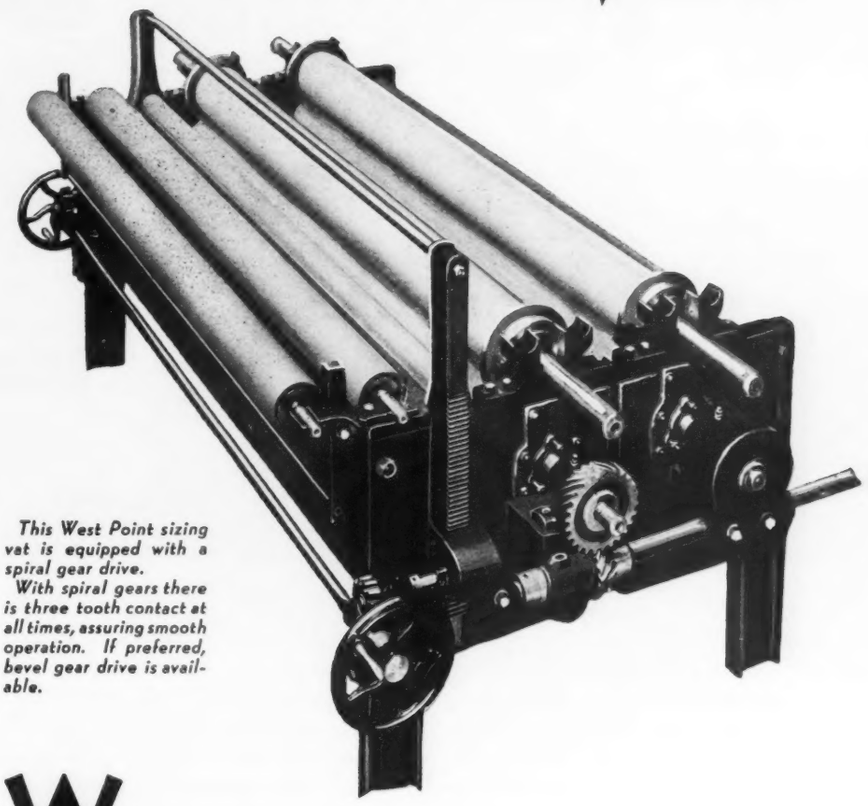
7. INCREASES CONCENTRATIONS. Certain vats which normally can only be used in concentrations of 2 ounces to the gallon, can be increased to 6 ounces to the gallon with Redoxyvat.

Use **REDOXYVAT** in your mill and enjoy these time and money saving benefits. Write us, outlining your present setup and procedure. We shall then send you more detailed, specific information.

ONYX OIL & CHEMICAL CO.
Jersey City, N. J.
Specialists on Finishing Materials.
Southern Repr. E. W. Klumph, Charlotte, N. C.
Midw. Repr. Maher Color & Chemical Co., Inc., Chicago
In Canada: Onyx Oil & Chemical Co., Ltd., Montreal.

Onyx LABORATORY-CONTROLLED **PROCESSING & FINISHING COMPOUNDS**

WEST POINT SIZING VATS



This West Point sizing vat is equipped with a spiral gear drive.
With spiral gears there is three tooth contact at all times, assuring smooth operation. If preferred, bevel gear drive is available.

WEST POINT sizing vats are mechanically right so that yarn can be properly and uniformly sized. In the sizing vat illustrated, the ends are of cast iron; the body is of cypress, copper lined. The rolls are of extra heavy copper with bronze heads and special expansion sleeves on shafts to prevent breaking of heads from rolls and consequent trouble from leaks. Squeeze rolls are of specified weight with bronze flanges at ends. Single or triple immersion rolls are furnished. Steam is supplied by brass perforated pipe.

Call on us for further information and prices.

•

We are also manufacturers of special machinery, cloth room machinery, textile machinery repair parts and gears.

WEST POINT FOUNDRY & MACHINE CO.

(Batson-Cook Company, Owners)

WEST POINT, GEORGIA

Cross-section of Vari-Pitch Sheave and Texrope Belt adjusted for maximum diameter – high speed.

Cross-section of Vari-Pitch Sheave and Texrope Belt adjusted for minimum diameter — low speed.

THE NEW Vari-Pitch TEXROPE SHEAVE

● The new Vari-Pitch Texrope Sheave, now offered by the Allis-Chalmers Mfg. Co., represents a vitally important development in power transmission. ● By a simple adjustment, which takes but a few moments, the diameter of this new sheave can be altered so as to give a variation in speed of from 15 to 25 per cent per sheave; if both sheaves are of this type a 30 to 50 per cent variation in speed is possible. This permits you to take advantage of higher speed cutting tools; it permits you to experiment with different speeds to ascertain at just what speed your machines show the greatest efficiency; it permits you to make different products, some of which require higher speeds and some lower — and do all this without dismantling and buying new drives, but simply by taking a few moments to make the desired adjustment. ● Vari-Pitch Texrope Sheaves are for manual and automatic adjustment. The manual type is recommended for applications that require occasional changes of speed. For applications that require frequent changes the entirely automatic type is recommended in which speed can be instantly varied to full range while the drive is in operation.

TEXROPE DRIVES

ORIGINATED BY ALLIS-CHALMERS

ALLIS-CHALMERS MANUFACTURING COMPANY · MILWAUKEE, WISCONSIN

USE YOUR F H A CREDIT

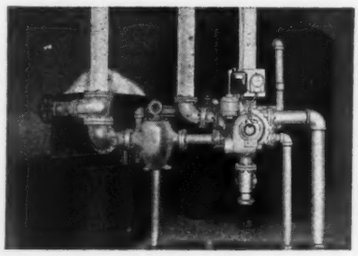
Install Permutit Self-Liquidating Equipment

At last the means for mill modernization are available. The terms of the National Housing Act provide for loans up to $50,000 to responsible textile mills. These loans are not made by the Government, but by your own banker, or they can be arranged through Permutit. The terms of payment allow gradual liquidation over a period of years.

Now you can purchase Permutit Water Conditioning Equipment. Permutit's record for savings proves that such equipment pays back its entire cost, usually within two years. Savings start immediately. That means that your monthly loan payments will be more than covered by the reduced operating costs effected by Permutit.

How does Permutit save money? Records of Permutit installations in several thousand American textile mills show that conditioned water used in wet-processing reduces reruns, rejections and yarn breakage . . . saves soap, soda and bleach . . . keeps boiler-tube repairs and replacements to a minimum. Experts agree that mill supply water *must* be absolutely clear, soft and colorless to enable finished fabrics of high quality to be produced. Therefore, Permutit cuts costs and raises quality . . . a double benefit!

Act now. Mail this coupon for complete details about this new plan and our free booklet, "Reducing Textile Costs and Troubles."



Bring your old equipment up to date. Install Permutit's new single-valve automatic control, and refill your softener with Super-Zeo-Dur. This new greensand zeolite has been recently perfected . . . it uses less salt and has a higher capacity for softening water than ever before. Write for details.

Permutit
Water Conditioning Equipment

The Permutit Company, Dept. B1, 330 West 42nd St., New York City.

Please send me without obligation your latest booklet, "Reducing Textile Costs and Troubles," and complete details about purchase of Permutit equipment under the terms of the F H A.

Name _____

Position _____

Company _____

Address _____ City _____

NON-ABSORBENT TO DYES

RESISTANT TO DYE-LIQUOR CORROSION

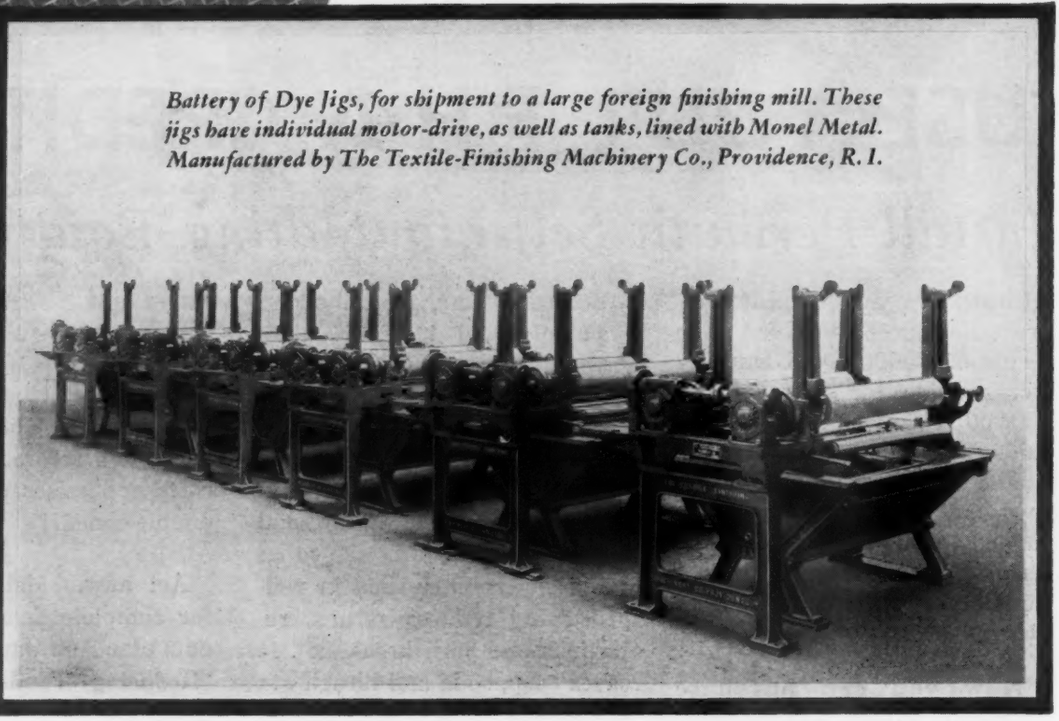
NO BOILING OUT NECESSARY

NO DAMAGE TO DELICATE FABRICS

These

DYE JIGS

don't cause Off-Color Troubles by rust, corrosion, contamination



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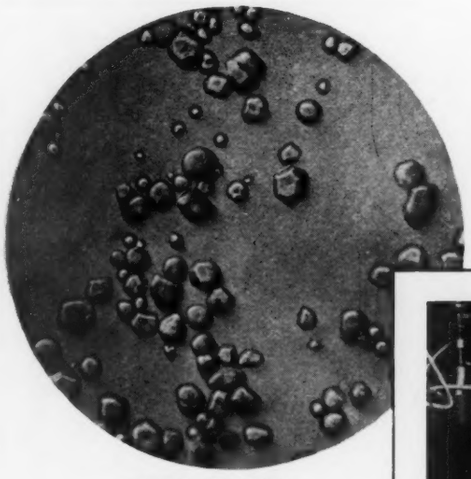
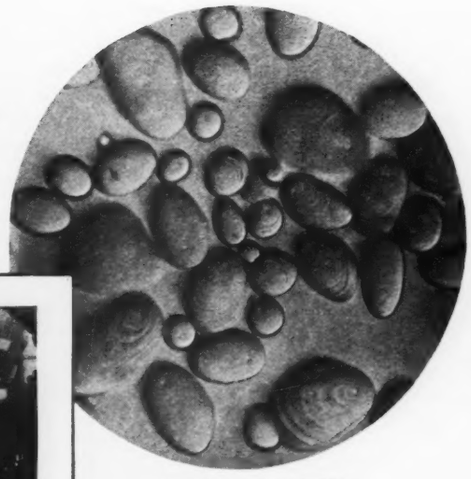


CORN STARCH



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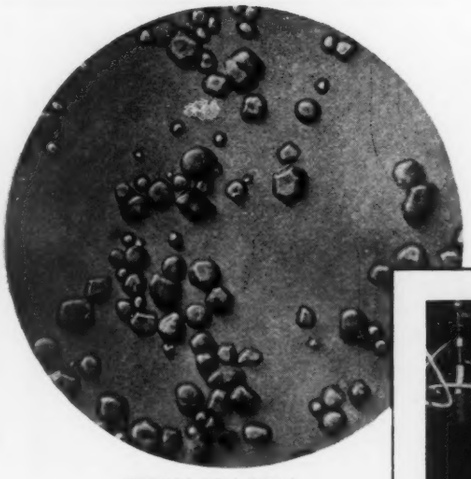

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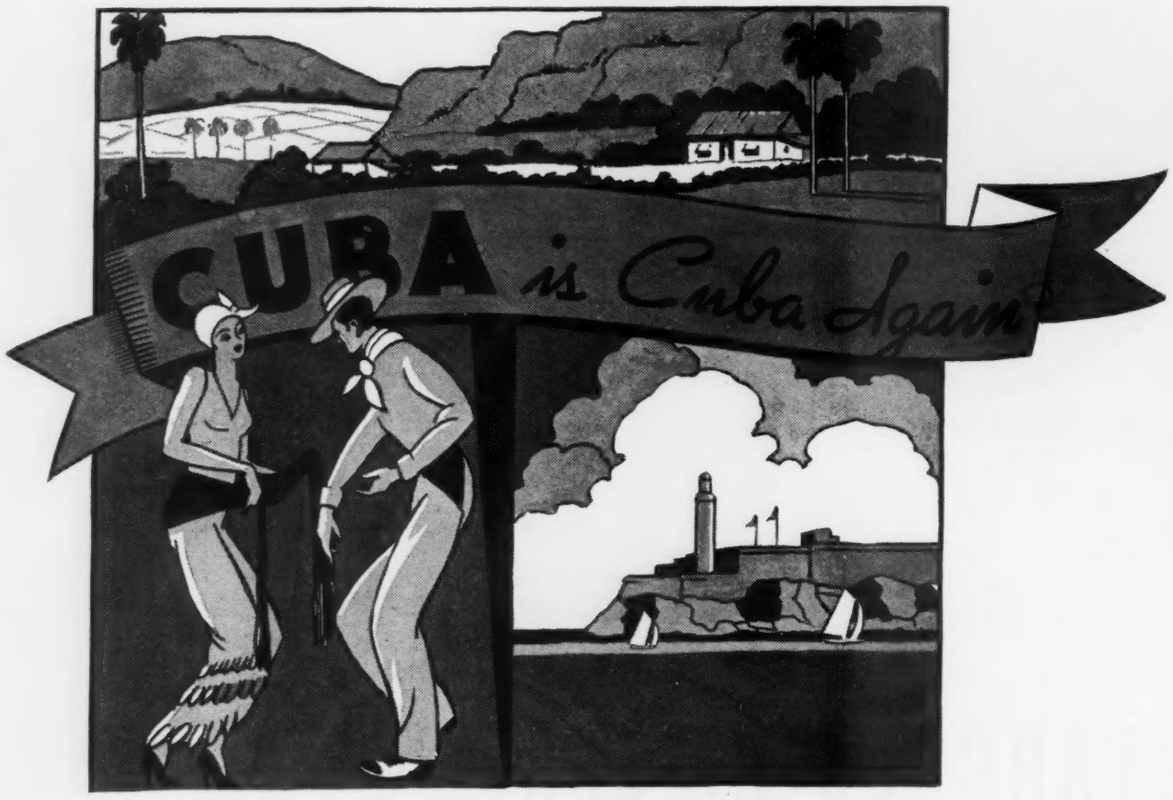

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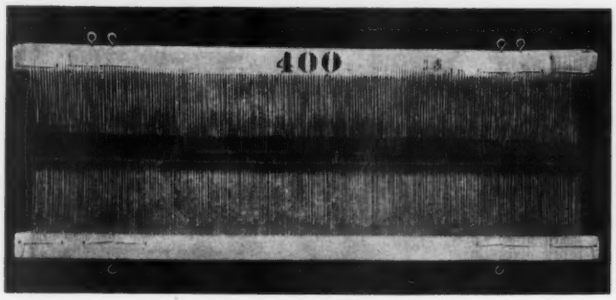

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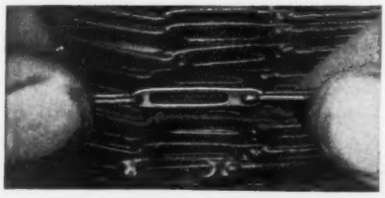

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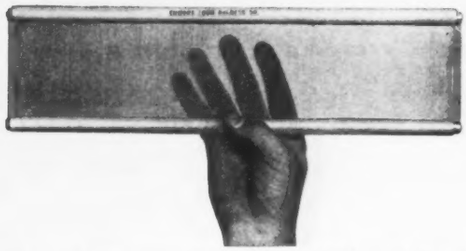

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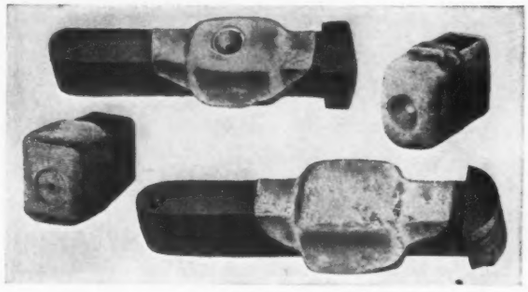

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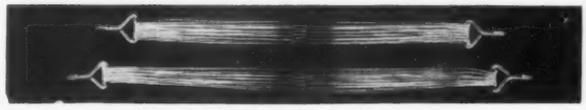

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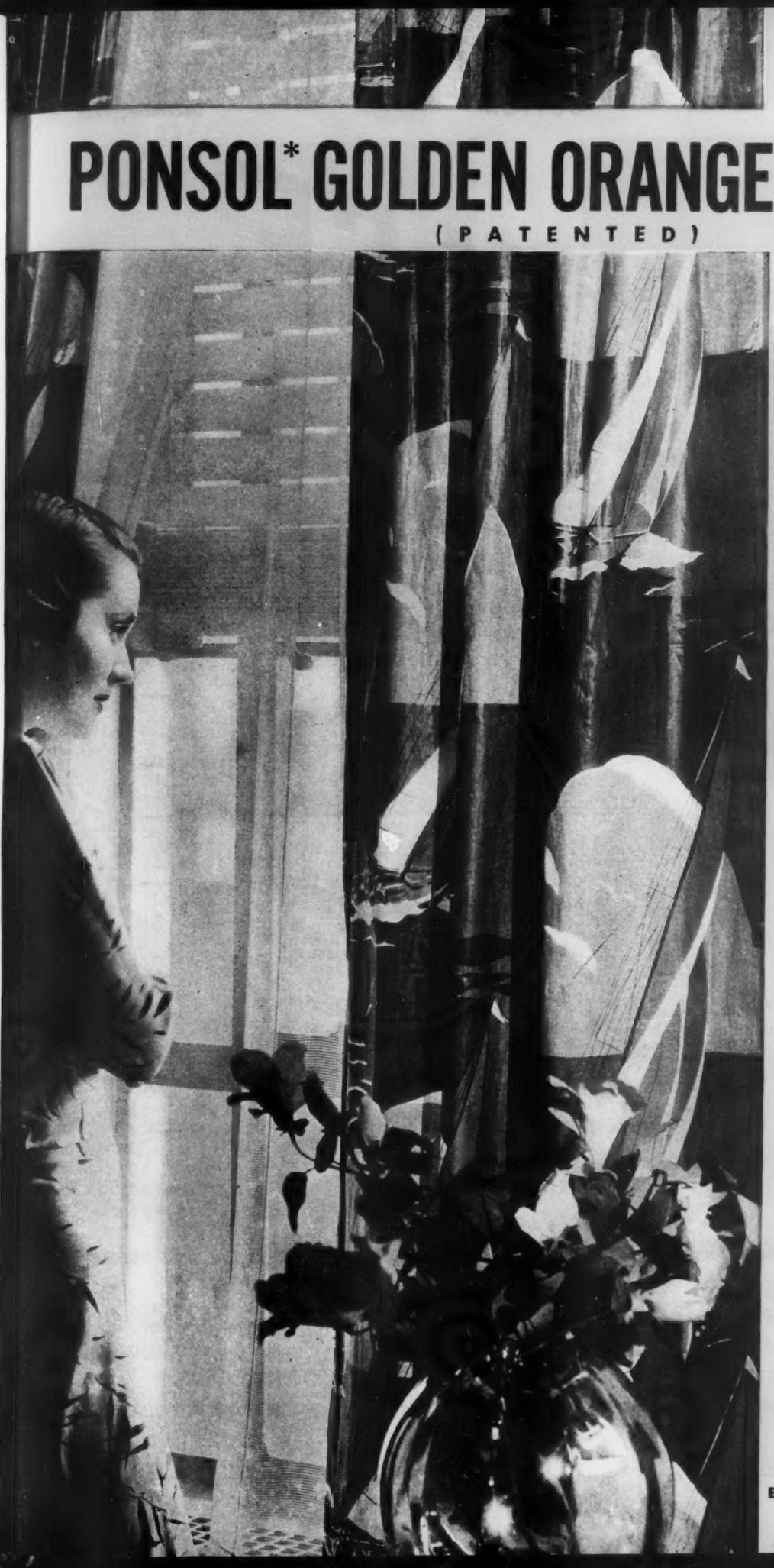

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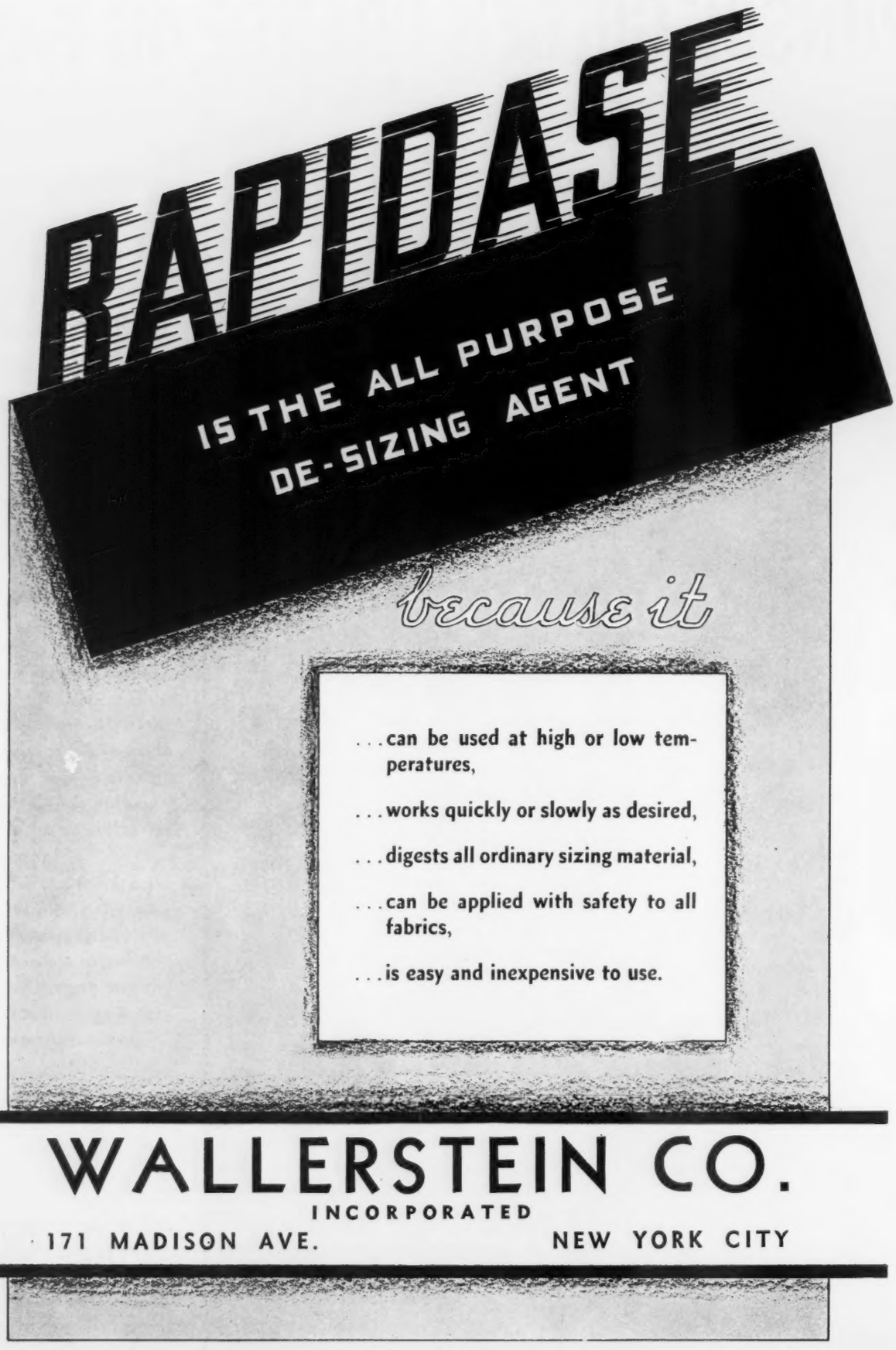
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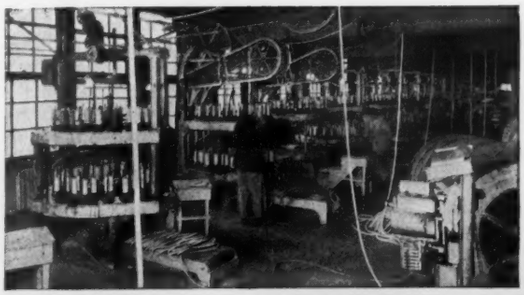

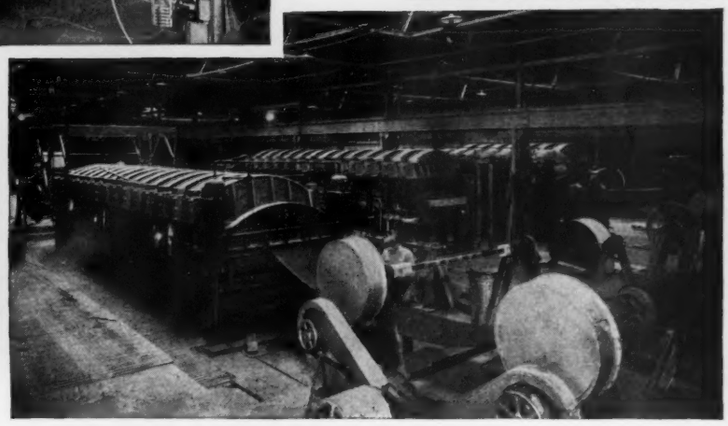

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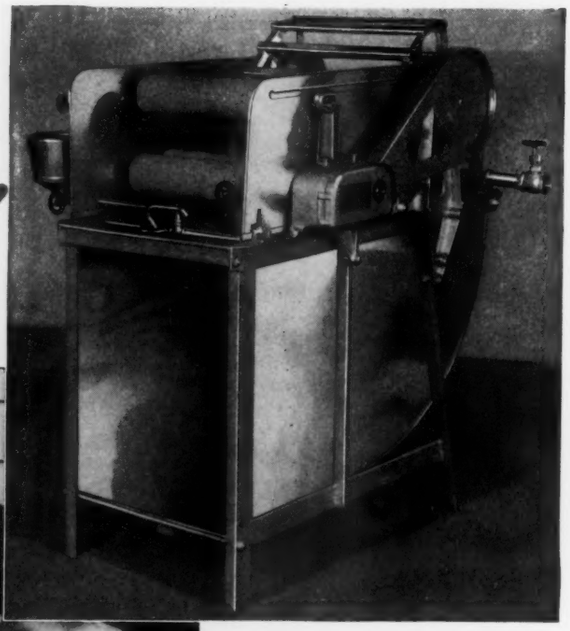

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COTTON

Vol. 99
No. 12

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Published Monthly by
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CANADA—$1.50; FOREIGN—$2.00

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A Topical Cross-Index of the articles published in COTTON during 1934 (Volume 98) is available upon request to readers who have a complete file of the magazine for that year. Due to a limited supply of copies, we cannot promise to supply copies of any of the issues of the magazine published during that year . . . . . .

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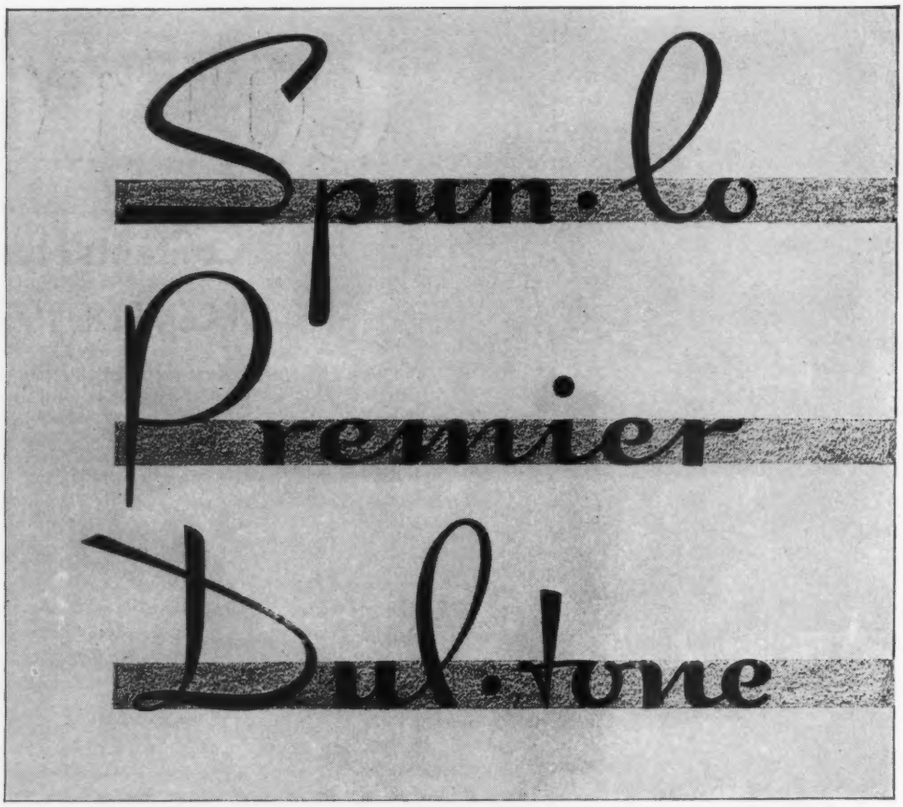

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Vol. 99
No. 12

COTTON

December,
1935

The Economic Advantages of Improved Varieties of Cotton

By J. H. Moore[1] and R. T. Stutts[2]

For many years the word "cotton" was used to describe most of the production in the United States. Little attention was paid to such properties as length, strength, uniformity and grade of the ginned product. Most growers were interested in cottons which would produce a big yield and a high gin turn-out. Growers in a few sections of the country endeavored to improve their product, and thus satisfy the demands of certain mills which required a better quality of staple than was commonly grown. However, as a general rule, most mills gave little thought to the quality of the raw stock; in fact, the information concerning quality at that time was very meager.

Gradually, the cotton trade, growers and agricultural research workers took more interest in the quality of the product, and it was realized that grade and staple were of considerable importance to the growers and the mills. Breeders then began to study the many mixed varieties with the object of improving the length of the staple. Single plants showing desirable characters were isolated, tested and multiplied, and also artificial hybrids were propagated. As a result of such efforts, varieties were developed which produced satisfactory yields and a longer, more desirable staple.

After the World War, it seemed that there would be a shortage of cotton throughout the world, and an extensive program was launched in the United States and foreign countries to promote the growing of improved varieties. Because of high prices for American cotton and the threatened shortage in the world cotton crop, several foreign countries undertook to grow large quantities of cotton, and the venture was a partial success based on the current prices prevailing up to the latter part of 1929. It is thus seen that rising prices and a shortage in the American cotton crop caused competition from foreign countries which could grow the staple. Along came the depression, and with it declining cotton prices. American cotton was still having to compete with foreign production, and in addition, there was the serious competition of artificial fibers. Growers in the United States had enjoyed almost a complete monopoly of cotton production until the last decade. No longer do they have such a monopoly. Even at present levels of cotton prices there is competition from foreign countries, and then there is what is called the "competition of the fibers".

To meet conditions as they are, it appears that the American grower must plant pure seed of improved varieties and also produce his crop at a minimum cost by using the most efficient cultural methods.

Tests covering a period of ten or more years at the N. C. Agricultural Experiment Station show that larger yields and a better staple are produced from improved varieties than from the mixed or unimproved ones. Field and laboratory studies of 9,088 bales grown on 570 farms in 15 widely separated communities of North Carolina in 1930, 1931 and 1932 show that the use of improved seed-stocks is the main factor[3] in the production of uniform 15/16 to 1-1/16-inch staple, and that mixed and run-down seed-stocks are largely responsible for the production of staple having poor quality. The results also show that the improved cottons are making larger yields under farm conditions than the unimproved or mixed stocks. A similar study in South Carolina showed approximately the same results.

Tests in North Carolina have shown that a better staple and larger yields were obtained from improved cotton varieties than from inferior seed; but since the real value of cottons depends upon their spinning quality, manufacturing tests were made at the N. C. State College Textile School to compare the spinning quality of pure and mixed cottons.

The prevalence of mixed staple in raw cotton is a matter of considerable concern to both the cotton producer and the manufacturer, who wish to produce a

(1) Cotton technologist, department of agronomy, North Carolina Agricultural Experiment Station. In co-operation with the N. C. State Textile School and Bureau of Plant Industry, U. S. D. A.

(2) Carding overseer, Monarch Cotton Mills, Lockhart, S. C., formerly with U. S. Department of Agriculture.

(3) J. H. Moore and J. A. Shanklin. Source and care of cotton planting seed in relation to the length of staple. N. C. Agricultural Experiment station. Technical Bulletin 42, 1931.
J. H. Moore. Relation of the quality of cotton planting seed to length of staple. N. C. Agricultural Experiment Station. Bulletin 296, 1934.

TABLE 1.—HISTORY OF SEED-STOCKS USED

Lot No.	Variety	History of Care in Handling Planting Seed
1*	Mexican 6-1-9	Registered seed direct from N. C. Experiment Station. Grown at Central Farm, Raleigh, since origin. Seed roll dumped, planting seed caught on floor.
2	Mexican 6-1-9	Grown under farm conditions for two years. Seed roll dumped, planting seed caught on floor.
3	Mexican 6-1-9	Grown under farm conditions for two years. Seed roll dumped, planting seed caught on floor.
4	Mexican 6-1-9	Grown under farm conditions for three years. Seed roll dumped, planting seed caught on floor.
5	Mexican 6-1-9	Grown under farm conditions for three years. Seed roll dumped, planting seed caught on floor.
6	Mexican 6-1-9	Grown under farm conditions for four years. Seed roll dumped, planting seed caught on floor.
7(a)	Mexican 6-1-9	Grown under farm conditions for four years. Seed roll dumped, planting seed caught on floor. Mixed seed.
8	Mexican 6-1-9	Grown under farm conditions for four years. Seed roll not dumped, usually gins after Mexican variety. Mixed seed.

*No selection was made after strain was isolated in 1926.
(a) Seed of this lot became mixed, although the grower indicated that the seed roll was dumped at the gin.

superior product. The cotton breeder has demonstrated the possibility of selecting strains which produce uniform staple length and excellent spinning quality when measured by such processing qualities as rate of production, waste, uniformity and breaking strength of yarn. What are the changes that take place in these superior strains of cotton when they are grown and handled under the usual farm and ginning conditions? Is it possible to retain a fair standard of spinning quality by reasonable care of improved seed? It was for the purpose of answering these questions that the following tests were conducted. A summary of the tests is given below; a detailed account is contained in Technical Bulletin 45[4].

Spinning Quality of Pure and Mixed Cottons Compared

Selection of Materials

The pedigreed strain of Mexican Big Boll 6-1-9 isolated by the N. C. Experiment Station was chosen for the study. The normal fiber length of this strain ranges from 1-1/32 to 1-1/16-inch in length depending upon conditions of growth. Seed of this strain grown on the Station farm during the season of 1929 were used as the standard. Seed of the same strain grown on private farms two to four years without selection were used to measure the changes that had taken place. From these farms, seven samples were chosen to represent the conditions of mixture found.

(4) J. H. Moore and R. T. Stutts. Spinning quality of cotton in relation to seed purity and care of seed-stocks. N. C. Agricultural Experiment Station. Technical Bulletin 45, 1934.

Seed of the seven lots were purchased from the growers and saved for planting on common ground with the standard strain during the season of 1931.

A brief history of the lots chosen for the study will be found in Table 1.

Production and Preparation of Samples for Laboratory and Spinning Studies

Seed of the eight lots of cotton described in Table 1 were planted in 1931, on a uniform field of Cecil clay loam in the order listed on the farm of W. T. Moss, Youngsville, N. C. The lots were planted in adjoining plats and each received the same amount and kind of fertilizer and cultural treatment. The season was normal, except for a deficiency of rainfall during August and September.

Two pickings were made in harvesting the cotton. The first picking, which contained the greater part of the total yield, was saved for the spinning tests.

Three hundred pounds of seed cotton from each plat was carefully ginned under similar conditions on a Munger brush-system gin equipped with 12-inch saws, and run at a speed of 400 r. p. m.

Measurement and Comparison of Fiber Properties

Seed cotton and lint samples of the eight lots were measured and compared as to the fiber properties of length, strength, diameter, drag and weight.

Manufacturing Tests

The spinning studies were conducted in the research laboratories of the North Carolina State College Textile School. These laboratories are equipped with automatically controlled humidifiers so that a constant relative humidity may be maintained.

All the lots of cotton were manufactured into yarns under similar mechanical conditions. Before each lot was run, it was opened and allowed to condition for 24 hours in the opening-room; after which each lot was weighed and the net weight recorded. The cottons were then passed through a breaker-picker, finisher-picker, card, two processes of drawing, three processes of roving, and through ring spinning. Much care was exercised during the spinning tests to see that all manufacturing conditions were the same for each lot.

The organization used and the numbers spun are very similar to those employed by manufacturing plants that are spinning types of cotton equivalent in grade and staple to those selected for this study.

The different lots of cotton were processed as nearly as possible under standard relative humidity conditions of 50 per cent in the picking room, 60 per cent in the card room, and 70 per cent in the spinning room.

Percentage of Waste

The net weight of cotton fed to and delivered by the pickers and cards and the weights of the various types of waste removed from each of these machines were recorded. From these figures, the percentages of visible and invisible waste were calculated. Visible waste consists mostly of leaf, shale, trash, motes, fly

and fiber. The difference between the net weight fed and the sum of the weight delivered plus the waste removed is known as invisible waste. Since this waste is greatly influenced by the variations in moisture present, it is sometimes subject to a gain in weight. This report, however, deals mostly with visible waste.

An analysis of the waste data in this test revealed the fact that there were very little differences in the total visible waste percentages of the eight lots. Since all of the lots were grown, harvested and ginned under similar conditions, very little opportunity was afforded for differences in the amounts of foreign matter. Although the differences in visible waste were quite small, it might be well to mention the fact that the smallest amount of visible waste was removed from the lot of cotton grown from registered seed which came direct from the Experiment Station.

Strength of Yarns

In making comparisons of the relative spinning value of cottons, where strength is the property under observation, the most general method in use is the skein-breaking test. The yarns from the various lots

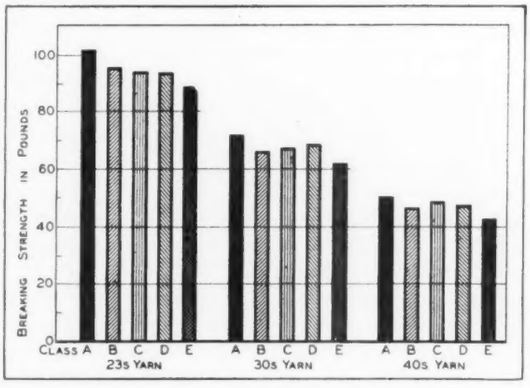


Fig. 1. The yarn strength of the eight lots of cotton arranged in five classes to show the relative influence of registered seed, practically pure seed and mixed seed, upon yarn strength. Twist multiplier of 4.25. Mexican 6-1-9.

Class A—Registered seed direct from N. C. Exp. Sta. (Data from Lot 1)
Class B—Seed two years from N. C. Exp. Sta. (Avg. of data from Lots 2 and 3)
Class C—Seed three years from N. C. Exp. Sta. (Avg. of data from Lots 4 and 5)
Class D—Seed four years from N. C. Exp. Sta. (Data from Lot 6)
Class E—Seed four years from N. C. Exp. Sta. (Avg. of data from Lots 7 and 8). (Seed of this class became mixed on the growers' farms)

were reeled, conditioned and broken under a constant relative humidity of 65 per cent and a temperature of 70 degrees Fahrenheit. The yarns were broken by the usual skein method on a yarn tester, the pulling jaws of which moved at the rate of one foot per minute. Twenty-five strength observations were made in each count and twist of each lot of cotton.

Since it is sometimes the case that some cottons give more favorable results when spun into certain numbers of yarn than others, the cottons of this test were spun into three numbers covering a wide range. These numbers included the general sizes of yarns now being made by spinners from cottons similar to those used in this study. Each number of yarn was spun with two different twist multipliers. The corrected average breaking strengths of these numbers, with a twist multiplier of 4.25, are illustrated in Fig. 1, which shows the following facts:

1. Cotton grown from registered seed (direct from the N. C. Experiment Station) made stronger yarns in all counts.
2. Yarns spun from cotton that had been grown under farm conditions from practically pure seed two, three and four years from the Experiment Station showed no significant differences in strength. These yarns were from 4 to 6½ per cent weaker than those spun from cotton grown from registered seed.
3. Yarns spun from cotton grown under farm conditions from mixed seed gave the lowest breaking strength, and were from 12 to 14 per cent weaker than the yarns spun from registered seed of the same variety.

Relation of Changes in Fiber Properties to Spinning Quality

The most significant changes in fiber properties of the pure strain of cotton when exposed to farm conditions two to four years are as follows:

1. The shortening of staple length as indicated by the measurements of ginned cotton by the commercial staple method.
2. The accumulation of short fibers and the loss of long fibers as indicated by the Baer-sorter records.

The correlation of the average commercial staple length of 20 "pulls" from ginned cotton with yarn strength of the 23s amounted to 91 per cent; therefore, staple length and yarn strength were associated.

The correlation of the percentage of fibers ⅞-inch and under (as measured by the Baer-sorter) with the yarn strength of the cottons amounted to minus 91 per cent, indicating the detrimental effect upon yarn strength of the accumulation of short fibers and the loss of long fibers in the strain of cotton.

The results indicate the value of pure seed stocks in the manufacture of strong yarns and show that precautions taken by growers to keep their planting seed pure are worth while. Maintaining the purity of the seed stocks prevented a marked decrease in the length of staple. Where mixing of seed took place, due to lack of precautions, the proportion of shorter fiber lengths (measured on a mechanical sorter) was increased.

General Conclusions

Because of competition from foreign cottons and from artificial fibers, American growers no longer enjoy a world monopoly in cotton production. Therefore, it is becoming necessary for the domestic growers, the mills, the cotton trade and cotton research workers to cooperate in the economical production of cotton having a high spinning quality.

The adoption by the trade of the long-draft spinning, super-draft and controlled-draft roving, increased speeds and many other improvements has

(Continued on page 108.)

WARP SIZING, by Paul Seydel (Article 2)

Flour and Starches are the materials discussed in this second installment of this new series on this important process in the mill . . . . . .

THIS is the second in a series of articles by Mr. Seydel. The first appeared on page 43 of the November issue, and contained a non-technical analysis of the composition of raw cotton. The present installment covers the flours and starches used in warp sizing; the next will cover gums and glues; and subsequent articles will discuss the other ingredients used in warp sizing and finishing. Reprints of the first article are available upon request . . . . . .

NOW THAT we know something of the composition of cotton we will pass on to an examination of the materials at hand for use in sizing this cotton. Let us take up next the subject of Flours and Starches.

The difference between a flour and a starch is this: In the case of the flour the grain has simply been ground and freed from husk and other impurities, but still contains the gluten, while starches are flour from which the gluten has been removed.

Gluten is a gummy substance which binds the different starch grains in groups. There are a number of different flours and starches known to science. However, the ones of most interest to the mill man are those of corn, sometimes called maize; potato, sometimes called farina; tapioca, sometimes called cassava; sago; wheat and rice. These will be discussed in detail later.

Let us first consider the use of flours, as compared with starches. Wheat flour has been, until recent years, one of the principal ingredients of sizing, especially in Europe where corn starch has not been used very long nor as universally as in this country, due to its scarcity and consequent high price. Wheat flour has some decided advantages in that it has good penetration and, due to its high gluten content, possesses considerable elasticity. However, these very things that give it its benefits also cause it to mildew more readily than pure starch, which is a decided disadvantage. To overcome this disadvantage and to break down the groups of cells, it is customary to steep these flours in water containing a high percentage of zinc chloride. Wheat flour is used mostly for grey cloth or warps to be weighted with china clay or other weighting materials as its adhesiveness is very useful for this purpose.

The manufacture of starches depends on the kind of starch desired and the raw material from which each starch is to be made. Some starches need the assistance of chemical as well as mechanical agents to purify them and isolate the starch granules from gluten and the accompanying products. In general, the starch is manufactured from the flour by separating the gluten through a washing process. The gluten having different weight or specific gravity from the starch can be separated in this manner.

Before taking up each different kind of starch and its particular properties in relation to sizing, it will be well to have some picture of the physical as well as chemical make-up of starches in general.

Starches, in General

Under a high-powered microscope the starch grains appear to be made up of concentric layers similar to the end of a log. The center layers are not as dense as the outer layers; the grains grow from the outside inward so that the inner layers are less dense, being the youngest ones. We can think of a starch grain, when magnified many times, as a rubber sack filled with powder. The sack is made up of a substance called cellulose or amylopectine, while the powder is made up of a substance called granulose or amylose. This sack is porous. It will allow water to enter but will not allow the powder to filter out. Cold water enters very little, if any at all, but hot water has the property of entering the sack and causing it to swell. This attraction of water by the granulose powder from the outside to the inside of the sack continues until the sack finally breaks. These sacks when broken give to starch its adhesive or viscous characteristics, particularly the quality of making the starch thicker. The amylose powder acts more like sugar in a water solution. In other words, it lends adhesiveness or stickiness, but no viscosity or thickness. After prolonged heating most of the sacks will have been broken and the starch will then have been thoroughly cooked. It is also very obvious that by agitation, the impact of these cells with the agitator, or one with the other, is sufficient to break them. These broken cell sacks float around in the solution of the granulose powder and water causing the starch to have its thickening properties. If something were added to dissolve these sacks or if through prolonged and severe agitation they were broken into tiny bits, the starch paste would lose its viscosity or thickening qualities and would become gradually thinner, until its value as a filming agent and therefore, as an ingredient of size, would be greatly decreased.

Let us keep in mind, then, as we proceed, that the qualities which give starch its usefulness as a sizing agent are: First, its ability to form a film. Second, its adhesiveness, by which is meant its ability to stick to substances. Third, its viscosity or ability to thicken up the mass so that more of it will adhere to the yarn than would if it were thinner.

Fluidity is the reciprocal or reverse of viscosity. In other words, the more fluidity to the starch paste, the less viscosity it has. They represent the same quality but are different measurements of the same thing.

Corn Starch

Maize or corn starch is the starch most used in this country for sizing purposes, both in its natural form and converted into so-called thin boiling starch. The main virtues of corn starch are that its price does not fluctuate as widely as that of other starches, the supply in this country is greater and more uniform in quality, and the price is generally considerably lower than that of other starches. It is produced mostly in America. It has fair adhesive and sizing qualities, its main objection being that it has a harsher feel than starches from other sources. This can, however, be overcome by the use of a good sizing compound and to a certain extent by the admixture of other starches, especially potato. Pearl corn starch is a thick boiling starch. By that we mean that it takes less starch per gallon of water to cause a thick paste than it does of the type of starch known as thin boiling.

Potato Starch

Potato starch is also classed as a thick boiling starch. It is produced chiefly in Holland, Germany and Japan, from the white potato. It is also produced in America but the American grade is generally considered to be of inferior quality.

Attempts have been made to produce starch from sweet potatoes in this country. The sweet potato starch produced experimentally is satisfactory for textile purposes, however, it has never developed commercially.

Tapioca and Sago

Tapioca starch is produced from the root of manioc, cassava or Brazilian arrowroot, a native of Brazil but cultivated extensively in the West Indies, Africa and India. Tapioca is not as thick boiling as corn or potato starches. Due to its method of manufacture, being made in small plants by cheap labor, the cheaper grades seldom run uniform in viscosity and usually contain considerable dirt and foreign matter. These grades must, therefore, be guarded against and not used for sizing purposes.

Sago starch is obtained from the pith of a number of palms. Singapore is headquarters for exportation, however, the Philippines, the Malayan Islands, and parts of India ship quantities of both raw and manufactured sago.

Different starches are completely gelatinized at different temperatures; by that we mean the temperatures at which they have their maximum thickness or viscosity. Whereas, potato starch is completely gelatinized at between 150 and 160 degrees Fahrenheit, maize or corn starch requires 165 to 170, and wheat and rice do not gelatinize completely until above 170 degrees Fahrenheit. In the presence of foreign ingredients a still higher temperature may be required.

Length of Cooking Time

There is some divergence of opinions about how long starches should be cooked. However, it is generally agreed that starch is sufficiently cooked after most of the granules or sacs have been broken. Furthur cooking destroys the viscosity by breaking the cell sac into small bits. In some starches this breaking down into small bits of the cell sac takes place rapidly, while in others it takes place comparatively slowly. It is preferable to sacrifice some of the viscosity for uniformity and in that case the starch should be cooked until further cooking produces no rapid changes in thinning. If it were possible to make very small batches and use them quickly before a marked change in thinning could be observed, it would be preferable, of course, to cook starch only to the point of its maximum viscosity. However, in general, this is impossible or impracticable, and the cooking must be continued until the point has been reached where the thickness of the starch is fairly uniform throughout the life of the batch. Potato starch for this reason requires considerably more time to cook than corn starch, also, thick boiling corn starch requires longer to cook than thin boiling, since in thick boiling starch the sacs are tougher and take longer to break.

Since cooking starch for sizing is intended to break the cell sacs, it can readily be seen that not only heat, which causes them to swell, but speed of agitation and efficiency of paddles, together with the thickness of concentration of the starch mix, will all have a bearing on the cooking of it because the more agitation, the more cell sacs will be broken by impact and the thicker the starch mix, the slower the movement of granules, which thereby lessens the intensity of impact. In very thick mixes of starch the paddles do not have a chance to strike as hard, they rather cut through the mass, therefore, the more concentrated the starch mix, the longer it takes to cook.

Starch is susceptible to many transformations through the action of chemicals; it can be used for the production of a long list of very useful materials, including sugar, alcohol, acetic acid, a great variety of gums, ranging from highly soluble to quite insoluble; from highly adhesive to highly agglutinant, depending on treatment. A number of acids, alkalies and even salts have decided and peculiar actions on starches and it is possible to duplicate and make substitutes for most of the natural gums used in sizing and finishing and in most cases greatly improve on such natural gums as: gum tragacanth, bone glue, Irish moss, locust bean gum, etc., because they can be made from starches in great concentrations, at lower cost, and with more dependable qualities, since the variations caused by nature in the natural state, due to changes in atmospheric conditions and soil, can be corrected and overcome.

The thin boiling starches are those starches which have had the sac or amylopectine part of the cell acted on by some chemical, usually an acid, or by heat, or both. The purpose is to dissolve some of this sac until it becomes much thinner and is, therefore,

more easily broken and for this reason does not have to be cooked as long as pointed out above.

These reactions are very sensitive and unless controlled very closely as to concentrations of chemicals, temperature of mixture and length of time that the acid is left in contact, will cause widely varied results. It takes highly specialized equipment and technical supervision to control this reaction. Naturally, when a thin boiling starch is used some of the most valuable properties of the starch are sacrificed by dissolving its cell sac as this cell sac is what gives starch its viscosity and its ability to form tough, elastic films. The inner powder does not have this property but is largely a filler. However, in certain cases it is advisable to sacrifice a small amount of this property in order to obtain other desired properties; principally in order to obtain more fluidity or less viscosity. In other words there is a limit to the thickness that the size mix can have to be satisfactorily handled through the size trough and equipment in the slasher room. When this point has been reached, any further addition of starch to the size mix would cause undue sticking, shedding and poor penetration. Therefore, in order to add more starch to such a mix for the purpose of obtaining more weight or more solids per gallon of size (the solids being the substances that give the weight to the yarn) it is necessary to first reduce the viscosity of the starch, so that it can be handled within working limits. The same viscosity can be obtained with considerably more thin boiling starch per gallon of size than with thick boiling starch. Naturally, when the water is evaporated, if the same number of gallons of the finished size have been taken up by the yarn, which will be the case if the adhesiveness and viscosity of the finished size is the same, then there will be more weight left on the yarn with the thin boiling than there would with the thick boiling. There are other properties, such as feel of the cloth, that can be varied by the use of thin boiling starch or thick boiling, or vice versa.

Since starch is considerably more soluble at high than at low temperature, the higher the temperature, the more starch is in solution and since starch in solution does not cause viscosity, the higher the temperature, the thinner the mass becomes. As it cools down it gradually goes out of solution and thickens up until a point is reached where it sets or gelatinizes. It is a disadvantage for this to take place. If a certain viscosity is desirable in the size box, it is better to keep the size near the boiling point and use more starch to obtain this desired viscosity than to cause thickening by keeping the size around 175 degrees Fahrenheit. The film will be superior. It is generally conceded that it is better to use a more concentrated size at 200 to 205 degrees Fahrenheit than to use a less concentrated size with the same viscosity at about 170 degrees Fahrenheit.

Advantages of Temperature Control

An efficient system of temperature control is useful in helping to obtain uniform results. After very close study and investigation of the subject of penetration, and after many experiments, the writer is convinced that considerable penetration does not occur with a good viscous size to any considerable extent. A size sufficiently thin to penetrate very far between the fibers of the yarn would lack in sizing qualities. The size must cement loose fibers, it must protect the warp, and for this reason it is most essential that besides good lubricating qualities it must have proper adhesiveness and agglutinant virtues.

The size on the outside is better than inside, provided the film is smooth and continuous and not rough and flakey; it has more elasticity and more resistance, just like a pneumatic tire is better than a solid tire for speed and good running work. Of course, it must stay there and on the proper ingredients of the sizing compound we must rely for keeping the starch where it should be. The fatty ingredients in a sizing compound have a tendency to reduce the rate of congealing of the starch with the result that the size will remain fluid through the squeeze rolls and until its water content is evaporated on the slasher drum. If size must be kept overnight it should be kept hot. Never permit it to gelatinize as reheated size is very inferior in quality to fresh size. Once gelatinized, starch will never have original viscosity, uniformity and smoothness.

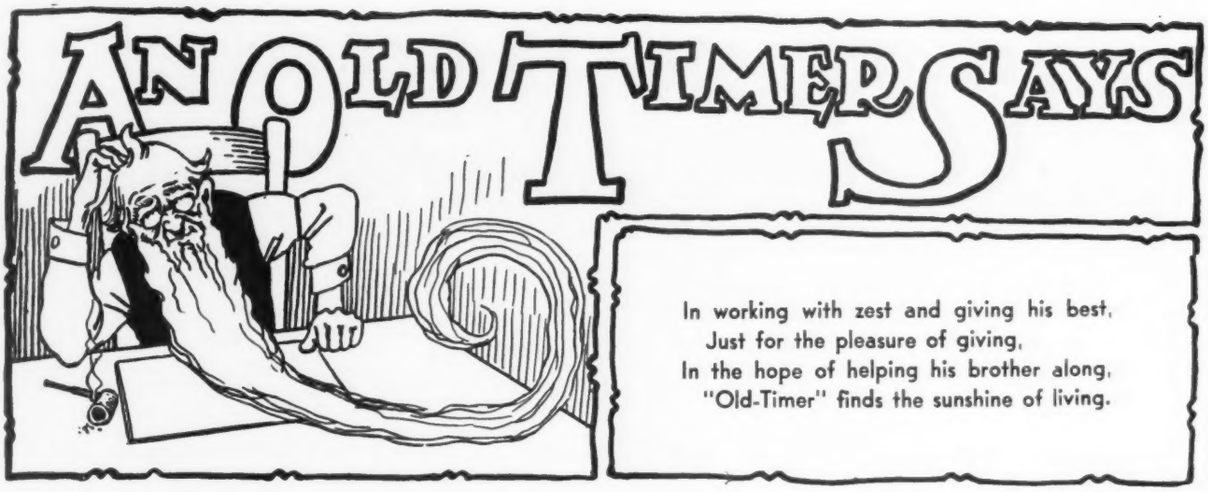
We will consider in the next article the group of materials that fall under the head of Gums and Glues that are used in sizing and finishing.

Corn Products Employee Feted on 50th Anniversary

The 50th anniversary of Charles Ebert's connection with the corn products industry was celebrated at a dinner given in his honor at the Downtown Athletic Club, New York City, recently. In addition to the entire executive staff of the Corn Products Refining Company, some 200 of his business associates and friends were present. In the midst of a setting attractively decorated for the occasion, glowing tributes were paid to the guest of honor by the speakers for his many valuable contributions toward the development of important manufacturing processes. Gifts from the employees of several of the company's domestic offices and plants as well as congratulatory messages from many of the foreign manufacturing units were given to Mr. Ebert.

Annual Cotton Handbook

The 65th edition of the "Annual Cotton Handbook" has been issued by Comtelburo, Limited, 11 Tokenhouse Yard, London, E. C., England, with American office at 66 Beaver Street, New York City. This publication contains statistics for all growths of cotton for which figures are obtainable, and in addition to the receipts, exports, spinners' takings, etc., issued by the American and Liverpool cotton exchanges, provides statistics for many other cotton centers. It gives the various reports of area, condition and yield in the United States and Egypt, as well as details of area and yield in many other countries. It provides figures on recent months and years and gives blanks for keeping these records for future months. In this year's edition, a table showing the highest and lowest figures of Egyptian upper futures prices for two seasons has been included.


AN OLD TIMER SAYS
In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brother along,
"Old-Timer" finds the sunshine of living.

Of Course, There's a Santa Claus!

SUCH a pity that as soon as people grow up they find out there is no Santa Claus, that is, there is no Santa Claus the way they had visualized him in their minds: a big, fat, round-faced man with long beard who actually came to the house and filled the stockings.

Before you found out, that man was just as real to you as your dad was, wasn't he? Can't you remember what a beautiful thought it was, the anticipation of his coming? What a thrill you got out of it for weeks! How your curiosity carried you from trains, wagons, etc., to candy and nuts, and you could just smell the oranges. Could anything be more beautiful? Could anything give a child more pleasure? And now you know it was all a myth, but does that fact take away the pleasure it gave you in your youth? No! decidedly No! It will always be a sweet memory.

However, when you grew up and found out, you accepted the explanation without giving it any thought. Oh yes, you were disappointed that such a beautiful illusion had faded, but when they told you "There is no Santa Claus" that ended it.

Well, right there, my dear friend, you "slipped". There **is** a Santa Claus, just as real as the one you had when you were a kid. He can give you just as much pleasure, yes, many times more pleasure, than you received from him as a child. He can now help you to be happy; he can help you in your work; he can help you live, live the life every human being is entitled to, a happy life.

He exists today just as **love** does; he exists just like **generosity** and **devotion** exist.

He exists just like **usefulness** exists.

He exists just like **companionship** exists.

Oh, and he exists just like hundreds and hundreds of the beautiful things of this world exist.

Do you begin to see what I am driving at, brother?

You know now that Santa Claus existed **only** in your mind when you were a child, still he gave you untold pleasure; he gave you more pleasure than any one thing you can recall, didn't he?

Well, confound it, don't you see he is just as real, just as materially real today as he was when you were a child?

Then there **is** a Santa Claus for you and for me and for everybody in the world.

If we will only put him into our minds like our parents put Santa Claus into our minds when we were children.

An Authoritative Interpretation of the 1935 Southern Mill Rules

By B. J. Kane
Fulton Bag & Cotton Mills

THE new Southern Mill Rules applying to the sale, purchase, transportation and handling of cotton, as recently adopted by the American Cotton Manufacturers Association and the American Cotton Shippers Association, replaced the old 1925 Southern Mill Rules, and became effective in October. A large number of important changes were made in the new rules, which were developed to clarify the old rules and bring them up-to-date. Since these rules apply so importantly to the transactions involving the raw material used by the mills, we are pleased to present here an authoritative comment covering some of the notable changes in the rules, feeling this information will be of interest and value to the cotton-textile man.

The committee revising the rules was fortunate in having available for consideration all of the rules and regulations extant throughout the world, as collected by the Department of Agriculture, and was able to consider all existing practice in the compilation of the new rules.

Mr. Kane, the author of the accompanying interpretations, is chairman of the committee on grade, staple and preparation for the cotton division of the Cotton Manufacturers Association of Georgia.—The Editor.

THE following changes are very notable in the set of rules for 1935, adopted by the American Cotton Manufacturers Association and the American Cotton Shippers Association, at a meeting in Greenville, to replace the old 1925 Southern Mill Rules:

Rules No. 3, 4 and 5 pertaining to bids and offers, are entirely new, and were very necessary. They are as follows:

3. All bids and offers shall, unless otherwise specified, be subject to immediate acceptance.
4. Bids and offers "good for the day" shall expire at 8:00 P. M. at the place from which they are made, unless rejected and/or cancelled in the meantime expressly or by a counter bid or offer.
5. An offer "good until cancelled" shall be good until advice of cancellation is received, but in no event longer than ten business days.

Rule No. 6 in the new rules is the same as paragraph A under Classification in the old rules, except in the old rules 10% of the cotton in sales of even running grades may be a grade below the grade specified, if offset by an equal percentage of the cotton a grade above the grade specified, whereas, in the new rules only 5% variation is allowed.

Rule No. 8, which is equal to paragraph C under Classification in the old rules is re-worded. Instead of saying that any cotton bought or sold on type or actual samples the buyer may reject any bales not equal to the specified type or sample in grade or staple, the new rule says the buyer may reject any bales not equal to the specified type or samples in all respects.

Rule No. 9 under Classification, is equal to paragraph D in the old rules, except where the old rules say that cotton rejected must be replaced within 20 days, the new rules say within 14 days. Also, at the end of the old rule it says the seller shall pay the difference between the market price and the contract price plus ¼c per lb. penalty, the new rule says the adjustment shall be based on the contract price and on the market value of such cotton on date arbitration outturn is received by buyer. It also says no second replacement shall be allowed unless agreed to by both buyer and seller.

Rules No. 10, 11, 12, 13, 14, and 15 are all new and read as follows:

10. Long staple cotton shall be defined as cotton of a staple 1⅛" and longer. Short staple cotton shall be defined as cotton of a staple shorter than 1⅛" cotton regardless of the territory from which it is shipped.
11. When long staple cotton is bought or sold on a grade specification, unless otherwise specified, the "B" preparation of the grade specified, as promulgated by the Department of Agriculture, shall govern as to preparation. When cotton is bought or sold on color of one grade and leaf of another grade, unless otherwise specified, the "B" preparation of the lower grade specified to govern.
12. When short staple cotton is bought or sold of one grade standard for color and leaf of another, unless otherwise specified the preparation is to be equal to the lower grade standard specified.
13. No cotton of irrigated growth or cotton that has been sledded or machined after the first ginning process can be delivered against contract unless sold as such on actual samples or types of same.
14. When cotton is sold subject to approval of samples before shipment, seller must submit samples to buyer for approval according to contract. If buyer fails to approve samples, seller may demand arbitration, in which case, samples must be put up with both buyer and seller, or their representatives present, and sent to Cotton States Arbitration Board for arbitration, their finding to be final save when the cotton passed by the Board arrives at destination, the buyer may have samples drawn and sent to the Board for comparison with samples originally passed by the Board, and buyer may reject any cotton that on comparison of samples the Board finds not equal to original samples in all respects.
15. When part of shipment or delivery of cotton is rejected, buyer or seller may demand arbitration of the entire lot.

In the new rules paragraph No. 18 under Shipments is equal to paragraph C of the old rules but it is re-worded entirely and is much more explicit than the old rule.

Rule No. 21 under Shipments is new and reads as follows:

21. All contracts for the sale of cotton must be filled by the party or shipper making the contract. No so-called "guarantee through" cot-

ton can be shipped and no shipper shall be allowed to make shipment or delivery other than the original seller with whom the contract is made, unless written consent is given by buyer to seller. Any such cotton shipped or delivered without consent of buyer may be rejected.

Rule No. 22 is also new and reads as follows:

22. All cotton delivered by motor truck, or other than by rail, must be properly protected from weather, and delivered to Mill or destination between the hours of sun-up and sun-down.

Rule No. 26 under Payments is equal to paragraph A under Payments in the old rules, except that No. 26 says that buyers shall have 5 business days after notice to pay drafts where the old rules only give him 3 days after notice.

Rule No. 29 under Weights compares with paragraph B on the Weights in the old rules, except that in the old rules the basis of all contracts shall be an average weight of 500 lbs. per bale, whereas, on rule No. 29 it says that all contracts contemplate the shipment of cotton of the running weights in the territory of origin. This rule also says that the buyer must report dissatisfaction with weights in 15 business days from receipt of shipment where the old rule says 10 days.

Rule No. 32 gives the mill 10 business days to make the claim, whereas, the old rule only gives five.

Rule No. 33 says that if the re-weights of the cotton show a gain in weight in excess of 2 lbs. per bale over the buyer's receiving weight the buyer shall pay the cost of re-weighing, otherwise, the seller pays. This is the same as paragraph C under Claims for Loss in Weight, except that the old rules say if the re-weights show a gain in excess of 1 lb. over the buyer shall pay cost.

Rule No. 39 in the new rules compares with Section B under Claims for Defective Grades in the old rules, except where the old rules say the claim must be made within 10 days from receipt of the cotton, the new rules say the claim must be made 10 business days from the date of the receipt of the last portion of the shipment.

Rule No. 43 of the new rules says that all claims and controversies between seller and buyer relating to quality upon request of either party to the contract, shall be arbitrated under the rules of the Cotton States Arbitration Board and shall be arbitrated by this Board and their findings shall be final, whereas, paragraph B and C under Arbitration of the old rules provide that each party shall select a competent arbitrator and these two arbitrators select a disinterested arbitrator.

Rule No. 46 of the new rules corresponds with paragraph F of the old rules, except the new rules add that it shall be the privilege of the buyer to charge the seller for handling and warehousing 50c per bale on all rejections for the first month or part thereof, and 30c per bale for each succeeding month or part thereof, and in addition, interest at the rate of 6% on all rejections from date payment is made by buyer to date of reimbursement by seller.

Rule No. 47 and No. 48 is new, reading as follows:

47. Seller must give buyer shipping instructions on rejections and reimburse buyer for rejections within ten business days after receiving arbitration outturn or date of mutual agreement the quality deficient.
48. On cotton bought for forward shipment unless otherwise specified, buyer shall have the right to fix price at any time up to the first notice day for month on which price at any time up to the first notice day for month on which price is based. Seller's option thereafter.

Rules No. 49, 50, 51, 52, 53, and 54 are all new

THE new 1935 rules, adopted to replace the old 1925 Southern Mill Rules, have been printed in book form by Provence, Jarrard & Martin, Greenville, S. C., and copies are available at a cost of $1.00 per dozen. These books contain the new rules as adopted, and the interpretations and explanations of the major changes, as made herewith, may best be considered along with a copy of the complete rules, which may be secured from the address given.—The Editor.

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and read as follows:

49. On cotton sold for forward shipment buyer's or seller's call and the price has been fixed but the cotton has not been shipped, with a variation in the market of one cent per pound either way, it is the privilege of either the buyer or the seller to call for margins to offset.
50. When the cotton has been shipped and invoiced on provisional price and in possession of the buyer and price not fixed, a variation in the market of one cent per pound either way, margins are to be covered by the buyer or seller as the case may be.
51. When the contract specifies that the cotton shall be landed, the price agreed upon shall include freight to destination and delivery free of cost to the buyer at the place designated: and the risk of the seller shall terminate and the risk of the buyer shall attach upon the arrival of the cotton at the destination specified. The seller shall guarantee actual delivery of the cotton at destination, and shall accompany draft with certificate or other proof of insurance satisfactory to the buyer. Cotton lost or destroyed in transit shall, at the option of the buyer, be replaced with like cotton which shall be shipped within fifteen business days from the date of notice of such loss or destruction.
52. Unless the contract specifies that the cotton shall be landed at destination, the cotton shall be at the risk of the buyer from the time of the issuance of bill of lading and buyer shall pay all drafts accompanying bills of lading covering such cotton whether delivered, lost, or destroyed in transit, and the seller shall not replace such cotton.
53. When nothing is said as to whether compressed or uncompressed cotton is to be delivered, either may be delivered at the option of the seller; but no so-called high density, that is cotton that is compressed to a density of 32 pounds to the cubic foot or more, shall be delivered without the consent of the buyer.
54. Buyer and seller shall have the privilege of incorporating any other rules, not in conflict with the spirit of the above rules, in their contracts.

An Old-Timer Short Shot

The prize-fighter soon gets too old to hold his job.

The doctor can get too old to be physicallp able to call on many patients.

The ball player gets too old to make good money at his trade.

The preacher gets too old to hold or interest his audience.

But an overseer or superintendent can keep young enough to get the production at a minimum cost if he will apply himself to a study of the mill business, and keep *persistently* at it.

Keeping everlastingly at it will run most jobs.

TESTS--and How to Make Them

A MEETING of the mill men of the Eastern Carolina area, at Durham, covered the subject of textile mill testing. The purpose of the discussion was to cover the proper methods of making tests, rather than the results of tests, and while some speakers wandered afield, as a whole, there was much good information developed on how tests in the various departments of the mill should be conducted . . . . . .

WITH a "different" kind of subject, the fall meeting of the Eastern-Carolina Division of the Southern Textile Association was held at the auditorium of the Erwin Cotton Mills Co., West Durham, N. C., on Saturday morning, November 2. Instead of the customary discussion of practical practices and results, the committee designed a program covering "Tests—and How to Make Them". P. B. Parks, Jr., superintendent, Mill No. 5, Erwin Cotton Mills Company, Erwin, N. C., chairman of the division, was in charge and explained that the committee had decided to conduct the discussion along the procedure to be used in making tests in the different departments of the mill that would be comprehensive and accurate, rather than to discuss results obtained from the tests, interesting though such facts are.

P. B. Parks, Sr., manager, Erwin Cotton Mills Co., West Durham, N. C., welcomed the visitors to Durham, and himself mentioned the need for more accurate testing in the mills. He recalled the practices of former years, under which superintendents and overseers operated their jobs by rule of thumb and conducted such tests as were made by the cut-and-try method, without records, and without benefit of precision instruments for testing.

The program took up the processes of the mill in order, and D. F. Lanier, superintendent, Oxford (N. C.) Cotton Mills, led the discussion.

Tests in Opening and Picking

Opening and picking were the first departments considered, and A. L. Oldham, overseer carding, Mill No. 2, Erwin Cotton Mill Co., Erwin, N. C., reported first, stating that, "in the opening room, for a test, the first thing is to get as many as ten bales of cotton, preferably more, and weigh each bale before you open it so you will have an accurate weighing of the cotton. After you get the cotton opened, you should go over the machines through which it will be run with a droplight or flashlight to see that every bit of waste has been removed. You should make a record of the kind of the machines the cotton is going through, with the speeds, settings, etc., shown. Somebody should be left in charge to see that the test is run correctly from beginning to end. The bagging and ties should be weighed separately, so as to give you the net weight of the cotton you are starting with, and during the test, you should weigh the waste from each machine. There should be several tests made as to different speeds and settings; it will take several of these tests to find out what you want to know."

Answering a question from Mr. Lanier as to whether he had tried shifting the machines around, Mr. Oldham said that he had run the cotton through one vertical opener from the bale breaker and one horizontal cleaner, through three vertical openers, and through two vertical openers, with the various machines shifted around and records made of the conditions and the amount of waste secured. With reference to vertical openers, Mr. Oldham said, "my recommendation along this line is that I would not want to use a vertical opener before the cotton had run through another machine. I do not like three vertical openers, or even two, in line, because this type of machine has a tendency to curl the cotton. There are different speeds at which you can run the vertical openers that will help in not curling the cotton. With a low fan speed, the cotton stays in there so long that it curls it, and a speed higher than the manufacturers recommend helps a lot in not curling the cotton."

P. B. PARKS, JR., superintendent of Erwin Cotton Mill No. 5, Erwin, N. C., chairman of the Eastern Carolina Division . . . . . .

As to who makes the tests, Mr. Oldham said that he always has somebody in the room to make these tests who doesn't do anything else at the time. The opening room man, he said, doesn't have time to make the test properly, and a test that is not made accurately is worse than no test at all, because the figures are misleading.

P. B. Parks, Sr., brought out from Mr. Oldham that he finds it advisable to line the floor with paper to catch the sand, etc., that falls out of the machine, and to use a flashlight or a droplight to make certain that all waste is cleaned out before a record is taken of the waste produced in a test.

George E. Gilliam, superintendent, Sterling Cotton Mills, Franklinton, N. C., was called on and said that while, because his mill had been closed down for sometime, he had not made many tests recently, he had made a test with respect to the yard-by-yard evenness of laps. In making this test he took the laps from one-process pickers and cut them up into one-yard lengths and weighed them, by means of a yard length frame which was placed on the lap and the lap then cut with

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Reported by Robert W. Philip

scissors. He added that he had also cut a yard in four parts and weighed that to get a cross-section. Under his conditions, he has his tests made under the supervision of the foreman and second hand, and does not use a special man for the purpose.

P. B. Parks, Jr., mentioned the practice of holding a lap up to the light and looking through it for thick and thin places and it appeared that almost everyone present had been doing this.

In connection with waste tests in the opening and picker rooms, W. H. Miley, Jr., superintendent, Erwin Cotton Mill No. 2, Erwin, N. C., mentioned that some interesting information could be secured by mills which have a willowing machine through which to run the waste and separate the fiber from the heavy waste; "in that way you can find out a lot of things about the character of your waste. In running a comparative test on different machine settings, etc., you get the percentages all right but not the character, and cleaning it in a willowing machine that has been made free of all dirt and waste, separates the heavy waste from the fiber and gives you a pretty good idea about the character of the waste you are getting."

W. H. Miley, Jr.

W. V. Byers

Mr. Lanier brought up the matter of tests to aid in getting more even laps, and W. V. Byers, assistant manager, Erwin Cotton Mills, Durham, brought out that, "one of the greatest things in connection with evenness of laps is to have a system by which you can control the amount of cotton in the hopper; that is one of the best eveners you can have on your machine. I think most mills have installed a system with which they can control the exact amount of cotton in the hopper. If you let your hopper run down to half full you will not get the same weight of lap all of the time, and I advise installing electrical or mechanical equipment to keep the same amount of cotton in the hopper at all times."

"If careful attention is paid to the spread of the cotton on the screens, the speed of the fans, etc., more even laps will be produced," said M. R. Harden, superintendent, Erwin Cotton Mill No. 4, "I think that each machine in the picker room certainly should have these things looked after first." He then asked for discussion as to the best methods of tests of a comparative nature between different types of beaters.

"It seems to me that the proper method for testing both the type of the beater and the setting of the beater, which takes two things into consideration, the setting between the feed roll and the beater itself, which affects the breaking strength to a large extent, and the setting of the beater to the grid bars, which affects the waste—is to test the breaking strength of the yarn," said P. B. Parks, Jr. "We know that the Kirschner type has a different effect on the cotton from that of the ordinary blade beater, and I would think that the proper method to test the two different types of beaters for breaking strength and cleanliness would be to run a number of pounds through a machine equipped with Kirschner beaters and a like amount through a machine equipped with blade beaters and then let that come through exactly the same processes up to the spinning, and there is the place you can get your breaking strength and get it accurately. If you made a test on three or four occasions and they showed that one of the beaters had the best breaking strength, I think you would be of the opinion that that beater is the better one."

Mr. Harden asked whether it would be better to compare the different types of beaters in the same machine or to run similar amounts of cotton through two different machines each with a different beater in it.

W. T. Byrd, overseer carding, Erwin Cotton Mill No. 1, Durham, stated that he makes such a test by swapping the beaters in the same machine. However, he brought out that cotton coming from different localities will be of differing grades and character, that the weather conditions between one day and the next will be different, and that all of these factors must be taken into consideration in making comparative tests on different equipment.

The question of setting Kirschner beaters was brought up and David Clark of Charlotte made the point that this type of beater should be set as close as possible without touching, for best results, and several of those present agreed with this theory.

T. W. Mullen, superintendent, Rosemary Mfg. Co., Roanoke Rapids, N. C., was called upon and expressed the opinion that a well trained, educated man should be assigned specifically the duty of making the tests, stating that this is what he is at present doing. He mentioned The Arkwrights, Incorporated, the research organization of the Southern Textile Association, and urged all southern mill men to submit any tests which they would like to have conducted to The Arkwrights for consideration.

Emphasis upon the importance of keeping accurate records of all tests made was put by Mr. Parks, Jr., in concluding the opening and picking discussion: "I think you must make records of your tests and file them. What good is a test if you do not have a record of it? I had that thing to pop up a couple of weeks ago and I was able to look back in a book where I had recorded some tests made nearly 10 years ago, as to waste on different processes and with different types of cotton, and it was very helpful."

Tests in the Card Room

Tests in the card room next came up, and George F. Brietz, superintendent, Selma Cotton Mills, Selma, N. C., stated that while he had not conducted many tests recently, he did feel that discussion along this line was valuable because with the price of cotton what it is today and the processing tax added, waste is more important than ever before. He declared that the opening, picking and card room waste constitutes about 85 per cent of all waste made in the mill, and

that it is a mighty good thing to study ways of how to reduce this waste and make better work.

M. R. Harden, superintendent, Erwin Cotton Mill No. 4, Durham, mentioned that, "we have found it very helpful to make tests on our flat waste, and we feel that it is necessary to weigh the number of grains per flat frequently. We are very careful on Mondays to make a weighing of our back waste, and then weigh the amount of grains of stripping from one flat on each card, and by keeping up with that we can tell just what each machine is doing, and we know just what each card is getting out. The assistant overseer makes these tests and the card hands help him with it, but he keeps the records."

"We have been making some tests along that line," said Mr. Brietz, "weighing the waste from individual flats, and we will find a variation of six to eight grains. Also, we weigh the sliver waste and find a variation of four to six grains.

"It is not a bad idea at the week-end to have the coiler bonnet lifted so you can see the gearing, and the same way on the drawing frames, all the trumpets should be set to gauge, and it is a good idea to look at the short studs frequently, because, as you know, out of sight is sometimes out of mind."

Mr. Lanier asked for discussion as to tests on cards with reference to speeds and settings, and to get the ball rolling, P. B. Parks, Jr., brought out that, "it is possible to change the licker-in speed and influence the waste materially. Also, it is possible to change something in the opening room and picker room that will not show up until you get to the card. For instance, you might change the beater speed on a vertical opener to cut down on the fly, and when you weigh it up you will think you are saving money, but if you will follow it through you will get a better answer. You must make your test to cover all of the cleaning machinery, and that certainly includes the cards. If you increase the speed of the licker-in I am sure you will have more fly for the same setting on the screens; if you want more fly out, that is the thing to do to get it. If you want less fly you might fool with the speed to see how much you can get out."

G. E. Moore

Again Mr. Parks referred to the matter of records, stressing the point that a lot of men keep records without really apparently knowing why the different items are put down and why the reports are kept, and without referring back to the reports. He urged more careful attention to these matters.

G. E. Moore, superintendent, J. M. Odell Mfg. Co., Bynum, N. C., was called upon and said that while he had made some tests in regard to licker-in speeds, feed plate settings, etc., he did feel that the character of the cotton has a great deal to do with the results. "It is a fine thing for us to make these tests and see which condition fits our particular character of cotton the best; we find that what fits at our place will not always fit at yours."

M. R. Harden, following Mr. Parks on the subject of licker-in speeds, brought out that, "some of us have learned a lot from our experience and mistakes, and if we tell our mistakes it may help the other fellow." He told of what he called one of the greatest mistakes he had ever made in the mill: "We were running some light shades, and were told that we must get it as clean as possible. In making tests to determine the amount of stuff taken out on the licker-in, we speeded the licker-in up, and we thought we were doing a swell job of cleaning, but I want to tell you that when we got that yarn down to the weave room we couldn't weave it. It was nice and clean, but we could not weave it because we had taken out our breaking strength. We should make our settings, etc., so that we will get not only the cleaning required but so we will not get away from our breaking strength."

J. W. Cates, superintendent, Edenton Cotton Mills, Edenton, N. C., was called on and said that about the only thing he could offer was the report of a test he had made recently on 100 laps, which showed a variation from 14.90 to 14.10 on a 14.50-ounce lap; also that he found about a 2-grain variation in a 58-grain card sliver and finished drawing sliver.

He also reported about a 10 per cent variation in 4.50-hank roving made for 24s and 26s yarn.

"We have made some pretty extensive tests on roving," said M. R. Harden, "and we have depended almost entirely on the Belger tester for our results. We start off with the slubber roving and if we find that it is not exactly right we keep on working on one back spindle and one front spindle until we get it right and then we bring those bobbins up to the intermediates and continue on through to the fine frames. When we find we are off on the intermediate, for example, we go right back to the slubber again. Sometimes we find that the slubber roving most certainly does affect the results we get on the intermediates. We keep a charted record, which shows the gears used, the frame, the date, whether back or front spindles, etc., and we have a young man who is being trained to do this work for us."

Delma L. Gery

Answering Mr. Brietz, Mr. Harden stated that it appeared that they have more variation on the roving from the back spindle than on that from the front spindle and the only way he could account for it would be that it is due to the difference in distance from the bobbin to the rolls.

At this point, P. B. Parks, Sr., took a few minutes to describe a Belger roving tester which is regularly used in the Erwin mills and which was on exhibition at the meeting. He again pointed out the difference between the old-time method of testing by rule-of-thumb, and the current practice with accurate, precision instruments available. He explained how the roving is tested on the Belger machine, and how the findings of the machine are recorded on a chart, and how the machine discloses whether the roving has medium, soft, or hard twist, and how the draft, ten-

sion, etc., for any given test on any given machine is readily recorded by the machine. Mr. Harden also discussed this machine, explaining how it reveals clearly such matters as incorrect tension, lay, etc.

Tests in the Spinning Room

The meeting then turned to test methods in the spinning room, and Mr. Harden declared that, "in making tests in the spinning room, we have confined most of our tests to one spindle. Is it better to make these tests on one or two spindles?"

C. W. Howell, assistant superintendent, Erwin Cotton Mill No. 6, Durham, N. C., declared that, "a good way to do that would be to run a number of tests; for instance, run for one hour of a doff on this spindle and compare it with a similar test on the next one, etc., and in that way get an average."

At this point W. V. Byers of Erwin Cotton Mills Company mentioned that he had made a number of tests on roll settings, for different staples of cotton, that these tests were made on a roll spacing machine to determine the proper settings for these rolls. He said the mill did not have one of these machines but that the test had been made on a roll spacing determinator by a competent man, "and I think it is important, in connection with evenness, to have the rolls set to fit the staple of cotton you are running."

Mr. Lanier asked P. B. Parks, Jr., whether he could give any information on the Reeves variable speed drive, and Mr. Parks stated that while the relative merits of types of drives were outside the scope of the meeting, that a test to compare different types of drives should be made with running the same roving on machines equipped with the different types of drives, and making an end-down test.

Ends Down Tests

Mr. Parks then used the blackboard to draw up a suggested form for use in making an end-down test, which he considered "the most valuable test you can make in the spinning room, because it enables you to put your finger on troubles occurring back of the spinning."

Mr. Parks first brought out that for the record of the report, it is of course necessary to show on the form the number of the frame, the yarn number, whether warp or filling, the date, the length of time run and the number of spindles run, the hank roving, the front roll speed, the grade and staple of cotton, type of drive, type of roll covering, draft, traveler, ring size, gauge of frame, spindle speed, humidity, etc.

Then he explained that the form should make provision for listing the particular cause of an end coming down, and that this list should be as comprehensive as possible, including roving run-out, roving broken back, bunches in roving, singlings, hard ends. top rolls, spindle out of plumb, flying lint, etc., etc.

D. E. Long, overseer carding and spinning, Oxford Cotton Mills, expressed the opinion that the test should be spread over as many hours as practical, and over as many spindles as possible. He asked E. C. Horner, who conducts his tests, to make a report, and Mr. Horner said that, "we ran it over a period of eight hours, two hours a day for four days. We not only got the total number of ends down under each item, but we ran another test along with that and every time an end came down we marked the spindle, and in that way we could see whether one particular end was coming down too frequently, and could tell whether that end needed to be worked on. We ran the test on four different days and marked the charts with a different color of chalk for each day. I found out, for example, that some of the ends would come down more than others."

Mr. Horner suggested the advisability of making a scavenger waste test.

In connection with tests on ends down, P. B. Parks, Jr., made a good point in connection with doing everything possible to leave out the effect of the human element. He explained that an end-down test was made primarily to determine the efficiency of the machinery, and that it was hardly fair to a good frame to charge up against it ends torn down by the operatives, such as at doffing.

Power Tests

After the spinning discussion, the meeting next considered the making of power tests, and Delma Gery of Erwin Cotton Mills Co., told of some of his experiences in making tests of this kind.

Mr. Gery stated that power tests were very revealing, particularly in disclosing losses of power due to friction. He stated that they used a recording wattmeter and a recording voltmeter in these tests, and that by measuring the efficiency of a motor they can determine very closely as to how much load the motor is carrying. He told of one test made recently with three different types of spindles in the spinning room in which one was found to run 20 per cent more economically than the others.

He reported other tests showing cases of overloaded and underloaded motors. Answering a question from Mr. Lanier, he said that at one mill he found some motors carrying 21 to 25 per cent overload and that this was apparently due to misalignment of shafting, improper loom adjustment, and tight bolts. Mr. Cates asked what he did in the case of an overloaded motor, and Mr. Gery replied that on one of his spinning room tests he felt the reason for the overload was due to the fact that the speed of the frames had been increased, and other changes such as using larger bobbins had been made which increased the load of the motor. In the case of two individually-driven frames, he tests the average power consumption and when he finds a difference begins to look for friction and its causes.

In making a test to analyze the consumption of power on a spinning frame, he said the first thing they do is disconnect the rail and run just the cylinder and spindles; measuring the power consumed under these conditions; then they put the bobbins on and measure the load, etc. He stated that on these tests he makes a record of the temperature and humidity.

Mr. Lanier asked whether the loom fixer or section man has anything to do with overloaded motors and Mr. Gery expressed the opinion that he probably does, and that improper fixing or overhauling affects the power consumption of a machine appreciably.

Mr. Cates brought out that he had recently made an exhaustive horse-power test and had found that the greatest friction load on the frame was due to a difference in the oil used. Mr. Gery said that the viscosity of the oil used would have such an effect and that on winders, particularly, he had noticed difficulty in starting up on Monday morning, due entirely to stiff oil.

Tests in the Weave Room

W. H. Miley, Jr., of Erwin Cotton Mill Co., Erwin, N. C., was asked to lead the concluding discussion of the morning which pertained to tests in the weave room. Mr. Miley stated that the most important weave room test was that with reference to the causes of loom stoppage. He said, "we pick out a man who is competent to make the test, and who is interested in finding out what makes the looms stop, and he goes along with the weaver and every time the loom stops he tries to determine, with the aid of the weaver, what caused it. We use a regular form for making tests on which we list the loom numbers down the side and the possible causes of the stops across the top. Of course the style of goods, speed of loom, etc., are shown. In our list of causes we show, first, unknown causes, then slip knots, winder knots, creeler knots, warper knots, twisted ends, gouts, uneven yarn, kinky yarn, hard size, etc."

Mr. Miley stated that occasionally the superintendent, the overseer or the assistant overseer goes along in making these tests. If the checker cannot determine the exact cause he lists the stop under "unknown". He told of a recent instance in which the work was running badly in the weave room and that the tests disclosed an excessive number of stops due to kinky yarn, and that this information enabled him to trace back to the source of most of their difficulties.

Mr. Harden suggested it would be advisable to make some of the loom stoppage tests on fabrics that are more or less standard, in order that comparisons of tests made over a period of years could be made. He also brought out that an effort should be made to determine what are the causes of seconds, because ends down usually affect the production more than they do the seconds.

This virtually concluded the discussion and the meeting was adjourned.

A Description of a Novel Means of Securing a

Controlled Adjustable Surface Speed Relation between Starch Mangle Rolls

By H. H. Iler, Plant Engineer

Union Bleachery
Palmetto Print Works

A WELL-KNOWN textile plant engineer describes here the development and application of a means for controlling, by adjustable means, the surface speed relation between the rolls of pure starch mangles. The discussion will interest those plants utilizing this type of equipment . . .

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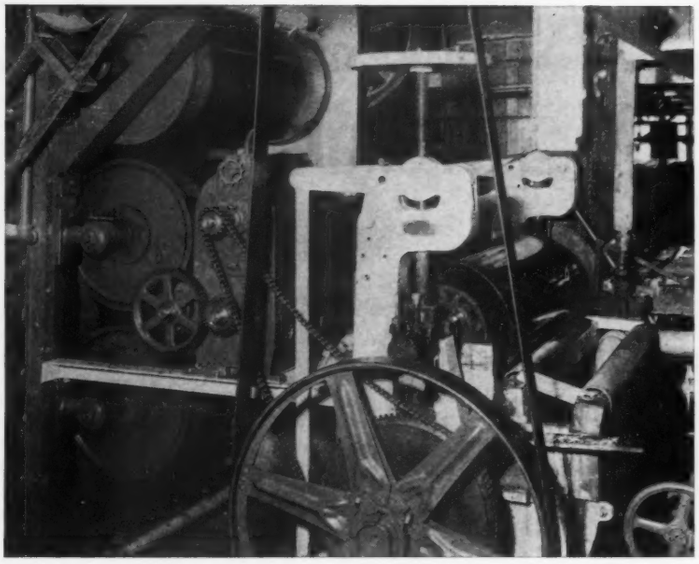
THERE are several methods of starching fabrics in continuous process, the choice depending upon the final finish desired. In this case, we refer to what is known as pure starching by means of a two-roll mangle which consists of two side frames of cast iron in which are mounted bearings for the shafts of two rolls superimposed one upon the other to constitute a nip or squeeze between their working surfaces at the point of contact. The bottom roll is usually partly submerged in the starching liquid which is maintained at constant level in a hopper so mounted under the bottom roll as to permit the roll to turn freely in the liquid. The bearings of the bottom roll are in fixed position as this roll does not require to be movable in any but a rotative manner. The top roll has its shaft carried in bearings which are adjustable vertically in the side frames to permit movement of the roll when seams go through between the rolls and to permit the roll to be lifted out of contact when the machine is not in use.

The operation of these two rolls in the relative positions described causes uniform permeation of the fabric being processed, the excess liquid being squeezed back into the hopper by the squeezing which the fabric receives at the point where it passes between the rolls, this action being controlled by varying the weight of the top roll by means of adjustable levers and screws contacting the top roll bearings. In the conventional pure starch mangle the top roll is usually driven only by reason of the fabric passing between it and the bottom roll upon which it is positioned, there being cases, however, where the two

rolls have been geared together by means of spur gears mounted upon their shafts so as to mesh together. So long as the rolls have identically similar circumferences under all conditions of operation, such gearing may serve to secure synchronism of surface speeds, or a synchronism of such when frictioning action between rolls is desired to secure special finishes, but unfortunately starching rolls may not always be made of materials which do not wear and require reconditioning that changes their dimensions. Therefore center distances are not permanent, and surface speeds may not be maintained in synchronism without expensive gear changes when reconditioning of surfaces becomes necessary. Another objection to the gear set-up is that movability of top roll requires nonstandard teeth in the two gears and backlash is reflected in the fabric surfaces passing between the rolls.



A clear illustration showing how the author applied means for a controlled adjustable surface between mangle rolls . . .

Starching rolls are made of various materials, the usual custom being to use bottom rolls of non-corrosive metals, with top rolls of rubber-covered metal, or of rock maple without covering. In some cases both rolls are of rock maple with steel shafts, such as in this case under discussion. In any case, however, there will be occasion to recondition the roll surfaces from time to time because of wear, or damage, and it is not often necessary to re-surface the bottom roll at the same time as the top roll, thus it is seen that it will be difficult, or even impossible, to keep the circumferences exactly similar. It is also a waste of money to work over both rolls when it is necessary to work over only one, and in cases where the starch mangle may be situated in range with other processing machines, working over both rolls will bring about a condition which may even require drive changes to restore accurate speed relation.

These conditions caused us to seek a means of controlled adjustable surface speed relation between the top and bottom rolls of starch mangles which would have none of the objectionable features of spur gear connection. We wanted a set-up which would permit us to prevent slip between the rolls when certain starching finishes were desired, and still enable us to secure frictioning action between roll surfaces when other finishes were wanted. We wanted at the same time a range of adjustment of surface speeds that would permit us to use our wooden rolls from their original diameter of 23 inches down to a 17-inch diameter where we discard them, whether it be one or both of a pair. Having a number of variable speed transmissions in use already, we were more or less familiar with their possibilities and this led us to make a study of the starch mangle conditions with a view of trying to apply one to solve our problem.

Considering that little power would be transmitted when rolls were operated at similar speeds, because of the frictional contact maintained by the fabric passing between them, the smallest size transmission was indicated, but considering also that there would be times when this condition of surface speed synchronism might be accidentally or purposely disturbed, a transmission having substantial capacity was clearly advisable, so a No. O-G Reeves transmission was selected. To enable it to serve dependably under such disturbed conditions it would be necessary to operate it at or near its rated shaft speeds so a 99-tooth sprocket was mounted upon the shaft of the bottom starch mangle roll which turned at 38 r.p.m., this sprocket driving, by means of a roller chain of ¾-inch pitch, another sprocket having 15 teeth, on the constant speed shaft of the Reeves transmission to turn it at 248 r.p.m. To maintain proper rotative direction of the top roll one step of gear drive was required, and introduction of this gave opportunity to substantially lower the sprocket ratio necessary for connecting the variable speed shaft of the transmission with the top roll shaft of the mangle, this arrangement working out so that a 30-tooth gear on the former meshes with a 72-tooth gear on a Reeves standard countershaft having a 33-tooth sprocket on the opposite end. This 33-tooth sprocket drives through a roller chain of ¾-inch pitch to an 85-tooth sprocket mounted on the top roll shaft of the mangle. The 99/15 sprocket chain drive, as well as the 30/72 gear arrangement, may be clearly seen in the foreground of the accompanying photograph, and the 85-tooth sprocket may be partially seen in the background.

Availability of local Reeves and Diamond Chain engineering service, as well as long experience with both of these products, resulted in the use of this equipment in this particular installation inevitably, and the accompanying photograph indicates their suitability for application. So far as our knowledge and information goes, this method of driving pure starch mangle rolls in controlled adjustable relation is new and original. In use for some time, it has proven to be the cure for slip, and a reliable means of friction mangling in starching cotton fabrics.

Mr. Cates brought out that he had recently made an exhaustive horse-power test and had found that the greatest friction load on the frame was due to a difference in the oil used. Mr. Gery said that the viscosity of the oil used would have such an effect and that on winders, particularly, he had noticed difficulty in starting up on Monday morning, due entirely to stiff oil.

Tests in the Weave Room

W. H. Miley, Jr., of Erwin Cotton Mill Co., Erwin, N. C., was asked to lead the concluding discussion of the morning which pertained to tests in the weave room. Mr. Miley stated that the most important weave room test was that with reference to the causes of loom stoppage. He said, "we pick out a man who is competent to make the test, and who is interested in finding out what makes the looms stop, and he goes along with the weaver and every time the loom stops he tries to determine, with the aid of the weaver, what caused it. We use a regular form for making tests on which we list the loom numbers down the side and the possible causes of the stops across the top. Of course the style of goods, speed of loom, etc., are shown. In our list of causes we show, first, unknown causes, then slip knots, winder knots, creeler knots, warper knots, twisted ends, gouts, uneven yarn, kinky yarn, hard size, etc."

Mr. Miley stated that occasionally the superintendent, the overseer or the assistant overseer goes along in making these tests. If the checker cannot determine the exact cause he lists the stop under "unknown". He told of a recent instance in which the work was running badly in the weave room and that the tests disclosed an excessive number of stops due to kinky yarn, and that this information enabled him to trace back to the source of most of their difficulties.

Mr. Harden suggested it would be advisable to make some of the loom stoppage tests on fabrics that are more or less standard, in order that comparisons of tests made over a period of years could be made. He also brought out that an effort should be made to determine what are the causes of seconds, because ends down usually affect the production more than they do the seconds.

This virtually concluded the discussion and the meeting was adjourned.

A Description of a Novel Means of Securing a

Controlled Adjustable Surface Speed Relation between Starch Mangle Rolls

By H. H. Iler, Plant Engineer

Union Bleachery
Palmetto Print Works

A WELL-KNOWN textile plant engineer describes here the development and application of a means for controlling, by adjustable means, the surface speed relation between the rolls of pure starch mangles. The discussion will interest those plants utilizing this type of equipment . . .

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THERE are several methods of starching fabrics in continuous process, the choice depending upon the final finish desired. In this case, we refer to what is known as pure starching by means of a two-roll mangle which consists of two side frames of cast iron in which are mounted bearings for the shafts of two rolls superimposed one upon the other to constitute a nip or squeeze between their working surfaces at the point of contact. The bottom roll is usually partly submerged in the starching liquid which is maintained at constant level in a hopper so mounted under the bottom roll as to permit the roll to turn freely in the liquid. The bearings of the bottom roll are in fixed position as this roll does not require to be movable in any but a rotative manner. The top roll has its shaft carried in bearings which are adjustable vertically in the side frames to permit movement of the roll when seams go through between the rolls and to permit the roll to be lifted out of contact when the machine is not in use.

The operation of these two rolls in the relative positions described causes uniform permeation of the fabric being processed, the excess liquid being squeezed back into the hopper by the squeezing which the fabric receives at the point where it passes between the rolls, this action being controlled by varying the weight of the top roll by means of adjustable levers and screws contacting the top roll bearings. In the conventional pure starch mangle the top roll is usually driven only by reason of the fabric passing between it and the bottom roll upon which it is positioned, there being cases, however, where the two

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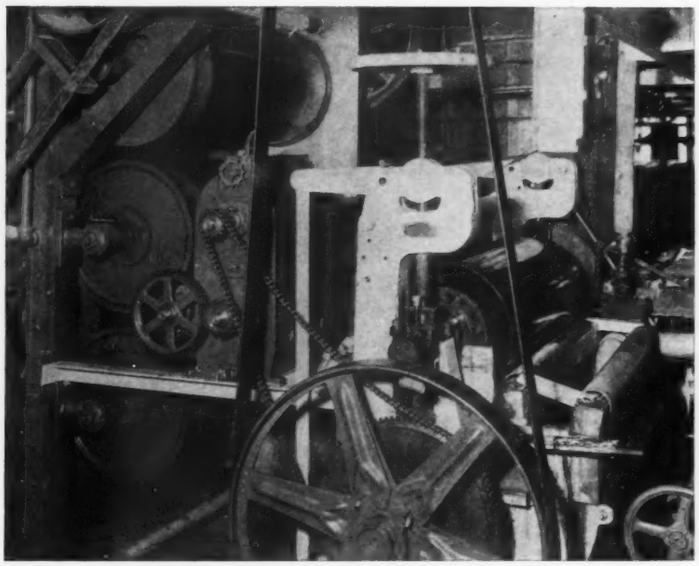

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Achievements and Opportunities in Textile Research Reviewed

RESEARCH in textiles, in the light of achievements and possibilities, was considered at the annual meeting of the U. S. Institute for Textile Research, held at the Waldorf-Astoria Hotel, New York City, on Thursday, November 14. The meeting was attended by more than 300 members and guests.

The leading features were addresses by Dr. Robert Andrews Millikan, eminent physicist of the California Institute of Technology, and Dr. J. R. Katz, director of the textile institute's warp sizing research, but there were in addition other reports and addresses of direct interest describing the actual application in textile mills of new research methods and results. These included a discussion by Chesler L. Pattee, technician of the Pequot Mills, Salem, Mass., of the use of the polarizing microscope in classing cotton; a report on the effect of the shape and size of silk filaments in producing two-tone dyeing, by F. A. Mennerich, microscopist of the United States Testing Company, Hoboken, N. J.; and a discussion of the physicist in the textile industry, by Dr. I. J. Saxl, director of research and development for the Wayposet Manufacturing Co., Pawtucket, R. I.

Francis P. Garvan was re-elected as president, and Charles H. Clark re-named as secretary of the organization. Ernest N. Hood continues as treasurer, and the vice-presidents are: Dr. E. H. Killheffer, Dr. H. DeWitt Smith, Prof. L. A. Olney, Alban Eavenson, and Prof. Edward R. Schwarz.

The Cotton Classer Uses the Polarizing Microscope

The use of plane or elliptically-polarized light in a low-powered microscope for detecting, and thus making possible the elimination of weak and poor-dyeing cotton, was described by Mr. Pattee. Immature, or unripe cotton fibers lack the secondary wall, which is formed during the last 20 to 25 days of fiber growth, and which is the major source of fiber strength, the speaker explained. Immature cotton fiber is not only very much weaker than ripe fiber, but takes dyes poorly. Every bale of all cottons contains some immature fiber, and the relatively small percentage of unripe fiber in a bale that can cause serious yarn weakness and unsatisfactory dyeing can seldom be detected by the hand of the most experienced cotton classer.

Professor E. R. Schwarz of Massachusetts Institute of Technology discovered that the degree of maturity of cotton fibers could be determined by using plane- or elliptically-polarized light in a low-powered microscope. He and Mr. Pattee, technician for the Pequot Mills, developed the technique by which this scientific achievement was first adapted for eliminating this source of manufacturing loss. Fortunately this utilization of the polarizing microscope by the cotton classer calls for little or no additional time and labor in this routine work, and the technique is so simple that it can be quickly learned. Mr. Pattee said in part:

"The growth of the cotton fiber on the plant is indeed most interesting and complex. Within three to five days from flowering, the fiber starts its formation and almost immediately reaches its ultimate diameter. At this time the fiber is less than 1/10th of a millimeter in length, and is to subsequently enlarge itself longtitudinally over 250 fold during the next 25 days. Picture this, if you will, as the length more than doubling the diameter during each hour of this growing period.

"The fiber-wall at this stage is not, however, being completed as it lengthens, for it is composed only of a primary wall encased in a cuticle, which bears the natural waxes and oils we are so concerned with in later processing. After the full length is thus reached, another 20 to 25 days is consumed in the formation of the secondary wall.

"Some authorities have pictured the secondary wall as being successively laid down upon the inside of the primary wall in daily growth-rings, arranging itself in an irregular helical pattern, and changing its direction at will from time to time. In a highly matured fiber, this deposit continues until the lumen is reduced to but a fraction of the original diameter. Upon the bursting of the boll, the cell-fluids dry up and the familiar convolutions set in from lack of internal support.

"Commercially, cotton is valued in accordance with its (1) staple-length, (2) grade, which includes color, foreign matter, and preparation, and (3) character, which covers a multitude of attributes which have not yet been reduced to measurement. Ordinarily 'character' includes such items as (a) body (whether the sample is hard or soft, or has a firmness or drag when pulled), (b) strength, (c) uniformity of staple-length, and (d) silkiness, as compared with a high degree of crinkle.

"These are all characteristics to be observed during the manipulation of the sample by the human hand, and are subject to any deficiencies in the nerve system of mankind. In a broad sense, the factors of 'character' can largely be determined by microscopic analysis, and it is believed by the writer that determinations by this method (or by other scientific means) may eventually be recognized commercially as specifications having a direct bearing on the premium or discount value as compared with basis.

"In using a low-powered microscope with axial transmitted light, we can observe the fineness of the sample and also the amount of convolutions present. By using plane-polarized light, or better still elliptically-polarized light, the degree of maturity can be determined.

"These three factors (namely, fineness, spirality and maturity) describe very well I believe the word 'character' as popularly applied, with the possible exception of uniformity, which can be analyzed by means of a Suter-Webb duplex fiber sorter or similar apparatus. In combination it would seem that the chances of a formula to compute that elusive demon called 'spinnability' is not far away.

"Fineness is important in the strength of the final yarn, by reason that intrinsically, as between two equally well-developed fibers, the finer sample has a higher tensile strength per unit-weight per centi-

meter. This has been amply demonstrated by various authorities.

"The number of convolutions per unit-length is also believed to have an important bearing upon the spun-yarn streng.h. Although slipperiness is probably desirable during the drafting processes, the interlocking of convolutions in the yarn should put a greater number of fibers to work in resisting fracture at any given point.

"The maturity, which is a measurement of the degree of thickening in the secondary wall, determines with fair accuracy the individual fiber-strength, and also to a more significant degree the clearness of the yarn and the even-dyeing characteristics in later processing.

"Having a problem arise concerning product research about three years ago, I found it necessary to control the percentage of thin-walled fibers during the test period. No means was readily available to accomplish this outside of purely optical apparatus, which was promptly procured and set up. For a year and a half records were kept of nep-frequency and yarn strengths. No attempt was made to record fineness or staple-length distribution, but the mean length was held nearly constant during the survey. The results were very satisfactory. How important we found the factor of maturity can be comprehended by the following observations as applied to 1 1/16-inch cotton:

"By cutting the maturity rating in halves (for example, from 80 to 40) the writer would anticipate an increase in nep-frequency of over 6 times, and a loss in tensile strength of approximately 15 pounds for 21s yarn. This is of course assuming that the factors of ribbon-width, and staple-length distribution, are constant. I will not go into the technique of this system of measurement, because anyone will find adequate literature available to at least introduce him to the subject. The phenomenom displayed by elliptically-polarized light is fundamentally due to a difference in orientation of structure, and is for all practical purposes independent of fiber diameter. Research by means of polarized-fluorescence and by X-ray diffraction patterns support this contention admirably, and it makes but little difference whether one favors the micellar or the cellulose-particle theory."

Silk Filament's Shape and Size Cause Two-Tone Dyeing

In the dyeing of knitted silk fabrics the appearance of slight color differences in adjoining sections of the same fabric is of frequent occurrence, and the cause of sub-standard merchandise and great loss. In silk stockings the trouble is exhibited by a sharp demarcation between the leg and foot portions. In a paper read at the U. S. Institute meeting, F. A. Mennerich described the research that had resulted in the discovery of a principal cause of two-tone dyeing. While admitting that certain variations in throwing, knitting and weaving may cause two-tone, the cause that he discovered is beyond the control of throwster, knitter and weaver unless they select raw silk for uniformity in shape and size of filament. It is differences in size and shape of the silk filaments in adjoining sections of fabric that is this principal cause of two-tone dyeing, according to Mr. Mennerich.

A difference of 0.03 in diameter ratio, or a difference of 0.7 micron in mean diameter of silk filaments is sufficient to produce two-tone dyeing. The flatter and larger filaments dye darker than the rounder and smaller filaments. Silk from different breeds, and possibly from various seasons and districts, are characterized by a difference in shape and size of the filaments. The discovery that difference in shape and size of filaments produces two-tone should. it was pointed out, make obvious the futility of attempting to correct for two-tone by any chemical adjustments in soaking, boiling-off and dyeing when such differences exist. No consistent relation was found between two-tone dyeing and other properties, such as color of raw silk, feel, hardness and exfoliation. No relationship was found among such properties of raw silk as diameter ratio, mean diameter, exfoliation, hardness and tenacity. By grading raw silk according to shape and size of filaments, it was concluded, two-tone dyeing can be minimized if ten-bale lots are so selected as to show a variation of less than 0.03 in diameter ratio and less than 0.7 micron in mean diameter. By routing ten-bale lots in throwing so that consecutive lots do not exceed this variation, the speaker stated, about two-thirds of all lots can be used with nearly complete elimination of inherent two-tone dyeing.

The Physicist in the Textile Industry

"The textile industry is regarded as almost virgin territory for exploration and development by industrial physicists," declared Dr. I. J. Saxl, research director of Wayposet Mfg. Co. The application of methods of fundamental scientific investigation is relatively recent in this industry. In view of the primary physical characteristic of filamentous materials, textile physics becomes of importance, he stated. He discussed the possibilities of this science as applied to the textile industry, with special attention given to tests for raw materials, to methods of standardization for manufacturing processes, and to problems of pure research and development.

Dr. Saxl mentioned his machine for the precise measurement of the work factor expended while a yarn is subjected to creping, or shrinking, and which will predict the crepage quality of yarns thus tested; also his chain weight tester, and his new apparatus for testing the stiffness of yarns and fabrics.

Of special interest to those co-operating in the warp sizing research now being conducted by the U. S. Institute, was Dr. Saxl's reference to new machines for measuring gelatine strength in terms of load versus compression characteristics, and another for measuring shearing strength of gelatine and other sizing films.

Proposed Research

The research council of the U. S. Institute, reporting through Warren E. Emley, chairman, told of a number of items of proposed research. Negotiations are under way with the Lowell Textile Institute for the preparation of a handbook of test methods and standards for those things which the textile mills buy; it will be put into compact form, readily usable by mill men. The Bureau of Standards has undertaken to develop a simple mechanical device for matching dyes as a matter of mill control; M. I. T. is considering a similar device for mill control of finishing processes. A.S.T.M. has undertaken a study of the regain of textiles and the effects of moisture on the physical properties of fabrics.

Fessenden S. Blanchard, chairman of the Institute's committee on economic research, told of plans for a study of the possibilities of vertical integration of merchandising in the textile industry.

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Do your job a little better than you are expected to and you will eventually draw more pay than you ever expected you would.

The man is not living who cannot make himself a more valuable man in his line of work if he will only try.

How many opportunities to improve your job did you pass up yesterday?—OLD-TIMER.

THE PIONEER--By William P. Jacobs

The fifth of a series, taken from Mr. Jacobs' new book and presenting the lives, records and achievements of some Southern textile pioneers .

THIS, the fifth installment, continues our reproduction, in large part, of the new book by Mr. Jacobs, "The Pioneer", which delineates the lives and records of pioneer southern textile executives. This installment includes stories on Henry Pinckney Hammett and James Lawrence Orr, Jr. . . .

HENRY PINCKNEY HAMMETT

An industrial pioneer contemporary with Captain Ellison A. Smyth, and one of his principal co-workers in the development of the interests of industry in South Carolina for many years, was Colonel Henry Pinckney Hammett, who was the son of Jesse and Nancy Elliott (Davis) Hammett, and was born on January 1, 1823, about twelve miles east of Greenville.

The name Hammett is an English surname of early origin. It originally derived its meaning from the baptismal name of "son of Hamon," and has been popular in Cheshire, England, for many centuries. The English ancestors of Colonel Hammett's family have not been traced, but it is known that the original Hammett in America was Jesse Hammett, the progenitor of this line, who came to America from England before the Revolution and settled in Maryland.

The records of the next few generations are missing, and the first descendent of Jesse Hammett, the American ancestor of whom there is positive record, is John F. Hammett. He was born in Virginia and died in Greenville, South Carolina. He was a planter and a proprietor of note. His son, Jesse Hammett, was like his father a planter. He was also a justice of the peace.

Henry Pinckney Hammett, the Colonel Hammett of this chapter, son of Jesse Hammett, became one of the most widely known cotton manufacturers of the South, and was one of the most honored and distinguished citizens of Greenville, South Carolina. His ingenuity, perseverance, and his many other pioneering qualities gained for him accomplishments far above the average, and enabled him to establish a record in industrial pioneering that is outstanding.

Colonel Hammett received his early education in the local schools of his neighborhood, and at the age of eighteen he accepted a position as a teacher near his home, and taught for two and a half years. At the age of twenty-two he entered into partnership in a mercantile business, which lasted for four years, and was quite successful.

Selling his share and interest in the store to his partner, Nathaniel Morgan, in 1848, Colonel Hammett purchased an interest in the Batesville Cotton Factory, which was owned in part by the father of Jane Bates, who was Colonel Hammett's wife. The firm name became the William Bates and Company, and Colonel Henry Pinckney Hammett continued his connection with this firm for fourteen years in the capacity of financial and commercial agent. In 1863 he removed to the town of Greenville, South Carolina, where he resided until his death.

In September, 1863, however, he enlisted in the Confederate Army, taking at once the rank of Quartermaster of the First Regiment of South Carolina State Troops. He was stationed with the regiment at Charleston, but after a few months, on account of ill health, he was compelled to return home. Early in 1864 he was detailed as war assessor for Greenville County, and continued in the service of the Confederacy in that capacity until the close of the war.

He was elected a member of the popular branch of the state legislature in the fall of 1865 and served for one term, declining re-election. In May, 1866, he was elected president of the Greenville and Columbia Railroad Company, a position which he filled for four years, also declining re-election. In the meanwhile, in 1862, he had purchased a water power on the line of the railway, with the far-sighted intention of building a cotton mill on the site at some future date.

The city of Greenville elected him a member of the Board of Aldermen, and later elected him Mayor. He served in each capacity for one term. He was one of the most highly esteemed citizens of Greenville, prominent in civic affairs, and a leader in most worthwhile constructive movements.

Colonel Hammett's greatest accomplishments, however, were attained in the field of industry. He founded and developed Piedmont Mills, now the Piedmont Manufacturing Company, and became a pioneer in the development of one of the first and largest modern, scientific cotton mills of the South. In 1873 he carried out the plan on which he had been working for several years. After the purchase of the land on the Greenville and Columbia Railroad he began the erection of the Piedmont Mills, having organized a corporation under a charter secured in 1874. He was elected the first president and treasurer, and was the largest stockholder in the company.

Under his able guidance and foresight the corporation grew steadily to its present position, as one of the leading manufacturing establishments in the South. A village grew around the mill, and was also named Piedmont, and now possesses a population of from 3,000 to 4,000 people.

In 1885 Colonel Hammett was one of those who purchased the Camperdown Mills in Greenville, which were organized into a new corporation under the name of the Camperdown Cotton Mills, with Colonel Hammett as president and treasurer. This position he held until his death. He was also, at his death, financially interested in many other corporations in the state. He had a deep and abiding interest in the welfare of the workers of his mills. It was through his leadership that a progressive and serviceable mill vicinity was developed around each enterprise in which he was interested.

He was of a progressive nature, and ever ready to launch out into new and improved phases of the textile industry. Being of a true pioneering spirit, he knew no difficulties, and was the master of his own destiny. He was an outstanding, upright, Christian gentleman and industrialist, who typified the noble characteristics of the leaders of the years gone by, who were responsible for the development of a great industrial commonwealth.

Colonel Henry Pinckney Hammett married Deborah Jane Bates in 1848. They had seven children: Betty, Mary, Edwin P., Thomas C., William H., James D., and George Pierce. One of the daughters, Betty, married Colonel James Lawrence Orr, Jr., who founded Orr Cotton Mills of Anderson, S. C., and was the father of the present president of Orr Cotton Mills.

James D. Hammett, one of the sons of Colonel

Hammett, in 1899 was elected secretary and assistant treasurer of the Orr Cotton Mills at Anderson. In 1903 he organized the Chiquola Manufacturing Company at Honea Path, S. C. and was made president and treasurer, and continued in this capacity until his death in 1924. Likewise he served as president and treasurer of Watts Mill at Laurens, as president and treasurer of Brogon Mills and Anderson Cotton Mills of Anderson, as president and treasurer of Orr Cotton Mills, as president of the American Cotton Manufacturers' Association, and of the Cotton Manufacturers' Association of South Carolina.

His son and successor, Lawrence O. Hammett, who is a grandson of Colonel Henry Pinckney Hammett, is now the capable president and treasurer of the Chiquola Manufacturing Company of Honea Path, S. C.

Another son, James D. Hammett, Jr., is also active in textiles and serving as assistant treasurer of the Chiquola Manufacturing Company.

JAMES LAWRENCE ORR, JR.

Among the pioneers in the industrial field in the South will be found men who started in their activities in various walks of life—some agriculturally inclined, others commercially, others industrially, and still others professionally.

The legal profession has produced a number of brilliant industrialists. Among this number we find Colonel James Lawrence Orr, Jr., who was the son of former Governor James Lawrence and Mary Jane (Marshall) Orr. He was born at Abbeville, S. C., on August 29, 1852, and died February 26, 1905, after a brilliant and constructive career.

His ancestors were Irish, the record of the family dating back as far as 1580. His first American ancestor was Robert Orr, born in Ballygowan, Ireland. He was a native of County Antrim, Ireland, that famous section in which were produced many outstanding ancestors of prominent Americans. Robert Orr died in North Carolina.

It seems to have been a natural trait for the Orrs to be engaged in textiles, and active in military affairs. Robert Orr was a linen merchant and Captain of the Militia in Pennsylvania.

His son Jehu Orr was born in North Carolina and moved to Anderson County in South Carolina. He also was a Captain in the Militia. In turn his son Christopher Orr was a farmer and a merchant, and likewise a Captain of Militia. In turn his son James Lawrence Orr, I, who was born in Anderson County in 1822, became one of the most famous men ever produced in South Carolina. He was in turn an attorney, an editor, a legislatureman, a member of Congress, Speaker of the House, Colonel of Orr's Regiment, a member of the first Confederate Senate, Governor of South Carolina, a Judge, and United States Minister to Russia, where he died.

James Lawrence Orr, Jr. attended the primary schools of Anderson, and Kings' Mountain Military Academy at Yorkville, from which institution he graduated in 1869. He then entered the University of Virginia at Charlottesville, Va., and remained there two years. He then spent a year in the law office of McGowan and Parker at Anderson, S. C., and in January, 1873, he resigned his position to accompany his father, who had just been appointed as Minister to Russia by President Grant. James Lawrence Orr, Jr. was appointed second secretary of the legation, and was established in St. Petersburg. On his father's untimely death, he was in charge of the funeral party on the 9,000 mile journey home, where his father was buried in Anderson, S. C.

Mr. Orr then resumed his law studies and was admitted to the bar in November, 1873. He went immediately into a co-partnership with Judge J. P. Reed of Anderson. In 1874 he was chosen a member of the state legislature from Anderson County and was re-elected for two subsequent terms, declining election the fourth term.

He was appointed solicitor of the Eighth Circuit Court in the autumn of 1881, and was elected to the same position in 1884, serving for seven and a half years, then declining re-election. In 1888 he was chosen permanent chairman of the Democratic State Convention. This conferred upon him the title of Colonel, by which military cognomen he has since been known.

As a member of the law firm of Wells and Orr, he re-entered active practice of law after retiring as solicitor. In 1891 he became interested in cotton manufacturing and was made president of the Piedmont Manufacturing Company, Piedmont, S. C. He was organizer of the Orr Cotton Mills of Anderson, S. C., vice-president of the American Company, the Mills Manufacturing Company, the Greenville *News*, the Paris Mountain Hotel Company and the Greenville Gas and Electric Company. He was a director of the First National Bank of Greenville, the American National Bank, and the People's Bank of Greenville, also of the Easley Manufacturing Company and the Cox Manufacturing Company. He also served as a trustee of the South Carolina Medical College, of Charleston, of Converse College in Spartanburg, and the Clemson Agricultural College of Clemson.

He was particularly active in educational and political affairs of the state for many years.

He was married on November 12, 1873, to Miss Betty Hammett, daughter of Colonel Henry P. Hammett, one of the state's most prominent industrial pioneers. Their union was blessed with six children: Floride, James Lawrence Orr, III, Eloise, Henry Hammett, Marshall Pinckney and George Wells.

The Orr Cotton Mills, one of the most successful in South Carolina, and which Colonel Orr organized, is now (in 1935) very capably directed by his son, Marshall Pinckney Orr, who became vice-president and assistant treasurer of the mill in 1923, and in 1924 was elected president and treasurer.

The near and distant relatives of James Lawrence Orr, Jr., are today engaged in the textile industry, and in direct charge of many of South Carolina's most progressive cotton mills.

A True Story About a Wife

By Old-Timer

Recently a young overseer was offered a better job, a job with a big firm. His wife was very likely the cause of his staying on with the comparatively small mill where he had been for several years. She was reared in that neighborhood and she did not like the looks of the place where her husband's opportunity was waiting for him. If she could only know what she caused her husband to miss. But she will never know—neither will he. He will probably finish his career as a mill man never earning over $5,000 a year.

Talk about opportunity! That young man simply took a stick and knocked old Opportunity in the head and then jumped on him with both feet. Let us hope Opportunity will get over it and come back to him some day.

But I am afraid not; certainly Opportunity will not be as big then as the one which came to him that time. He was probably too weak to see his Opportunity. One thing we do know, and that is that he certainly was not far-sighted enough to look over the fence and see what lay ahead of him ten years hence. Such a pity!

CURRENT TEXTILE TOPICS ....

Talk of the Month

COTTON MANUFACTURERS recently have enjoyed the unusual privilege of doing business under what appeared something like normal trade conditions. In May they were relieved of the hamstringing NRA. Then late in August the cotton market was restored to practically free trading. Thus the semblance of former conditions has been restored in recent months, with the continued AAA processing taxes an outstanding reminder of a strenuous era of regulation by government.

Semblance of Normal Trade Once More in Cotton Industry

It would be amiss to emphasize the idea of normality. The outlook is not clear, especially in view of the impending Ellenbogen bill after the decision of a lower court on the Guffey bill. "Normal" may never again be what formerly prevailed in private industry. But at least the industry is taking advantage of a present healthy business and looking forward to some months of good activity.

As stated by George A. Sloan at the start of November, the market was unquestionably healthier than in 1933. The long dull period of manufacture intervening had decreased distributors' stocks and buyers' needs consequently were heavy at the start of the fall. The *Wall Street Journal* said that buying was on the most promising basis for sustained recovery since 1932. And S. Glassford, former president of the Association of Cotton Textile Merchants of New York, declared supplies on hand all down the line as low in proportion to population as at any time in a century.

Thus it was that a lull in buying of cotton goods the last half of October and first week of November, as expected, could not last and did not disturb producers. It served rather as an advantage in a sense, as a test of the composite attitude of the industry toward maintenance of the sound operating schedules adopted under the NRA and voluntarily continued under self-government.

It further demonstrated the value of an open market for cotton. The free play of natural forces, with cotton normally reacting to the November crop report and active buying from abroad as well as at home, brought a spurt in the price of the raw material which terminated the temporary lull in goods trading. Buyers were waiting and testing values for goods. Mills were getting anxious, because of pressure, though their backlogs were good and buyers' requirements were known to be large. A kindling spark was needed, and it was found in the raw cotton.

Regarding voluntary regulation, the temporary lull in activity brought discussion of possible further curtailment in the important printcloth division which gave intimation to buyers that the manufacturers are not minded to wait, as in the disastrous days of the past, until ruinous accumulations placed them at the mercy of the purchasers. The ever-present threat of momentary over-production, as stated by B. B. Gossett, former president of the American Cotton Manufacturers Association, is what brought about the ruinous losses to the cotton textile industry prior to the establishment of the code.

Since the mills cannot and do not indefinitely produce more than the market absorbs, as he also pointed out, it is the part of common sense to regulate output in time to forestall burdensome accumulations. Curtailment is inevitable and had better be first than last. The buyers eventually will take all they need, will be deprived of the wonted club for banging prices down and for that reason will not delay so long as when they have waited for the last cent of concession that might be secured. Eternal vigilance on production is the price of profitable mill operation.

It is also the price of liberty in operation of private industry, if such operation can be maintained against the forces of political antagonism. While Major Berry, co-ordinator for co-operation, was asking business to come to Washington and lay down a program for co-operation with the Administration, Secretary Wallace burst forth with remarks to the effect, it was stated, that billions of relief expenditure were the result of industrial reduction programs which "plowed millions of workers into the streets."

It is hardly to be wondered that the cotton industry, together with other branches of production, has been outspoken against renewal of co-operative relations with the Administration. This industry did its best to make a go of the NRA. Its experience, except for the demonstration of value in control, has been humiliating. A government which offers a partnership with industry needs something better to put forth than the Japanese cotton goods pact, the processing taxes and amendments to the AAA bill to circumvent their annulment, as well as the pending Ellenbogen bill.

These things and others are significant that the old order changeth, and that right smartly. The New York *Journal of Commerce* recently enumerated a bewildering list of taxes imposed on Boger & Crawford, operators of mills in Pennsylvania and North Carolina, which for the year will amount to 14 per cent of its overhead charges. And it faces, with the whole industry, the costs of the Social Security Act beginning January 1.

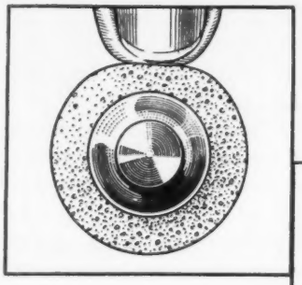
Prompting the question "for whom should mills be run?" is a statement that the Bourne Mills of Fall River, Mass., in its last fiscal year paid $25,000 to stockholders (in dividends) and $259,796 to farmers (in processing taxes). If the Ellenbogen bill should be made into law, the question would be "for whom and by whom should mills be run?" The recent opinion has been expressed in the trade that a strong at-

NOW...

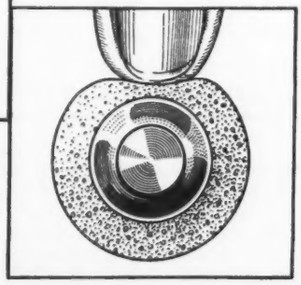
A BETTER START-UP ON COLD MONDAY MORNINGS

That's the experience of mills operating on the new *Extra Cushion* cot, made by Armstrong's exclusive TUBULAR process.

MAKE THIS THUMB TEST

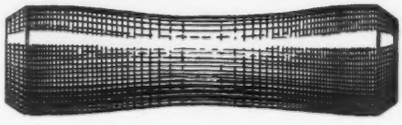


LEFT—BLOCK TYPE COT. *Press hard and notice the cushion of this type cot.*



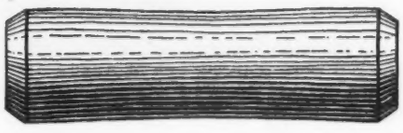
RIGHT—EXTRA CUSHION COT. *Feel the greater resiliency and comeback even when cold.*

NOTE THIS DIFFERENCE



LEFT — BLOCK TYPE COT. *Notice amount of grooving from operation.*

RIGHT—EXTRA CUSHION COT. *Uniform density insures more uniform wear.*



THIS fall and winter, mill men are discovering another important advantage of the new Armstrong's *Extra Cushion* Seamless Cork Cots. "I've been noticing," many a spinning overseer is saying, "what a big help these new cots are at start-up time Monday mornings."

And they're right! These new extra cushion cots *do* start up better! Thanks to the special tubular process of cot manufacture developed by Armstrong, there is built right into these cots greater cushion and toughness *plus* a greater degree of uniformity from end to end.

The increased resiliency means quicker response to roller weights under all temperatures and atmospheric conditions. And because of their uniform density, these cots wear more evenly, with less grooving out under the traverse motion. Together, these vital improvements insure better alignment and full length contact with the bottom steel rolls at all times.

In addition, the more thorough baking afforded by the tubular method of manufacture gives added strength to these cots . . . a guarantee of long and efficient service.

Today, send for complete details about Armstrong's *Extra Cushion* Seamless Cork Cots. Get the facts about the other big advantages—such as, easier handling in making frequent changes of numbers, more satisfactory work even on old frames, less end breakage, and a stronger, more uniform yarn. Write Armstrong Cork Products Company, Textile Division, 923 Arch Street, Lancaster, Pennsylvania.

ARMSTRONG'S *Extra cushion* SEAMLESS CORK COTS

FOR SPINNING AND CARD ROOM ROLLS

tack will be necessary to defeat the measure, in view of the favor that is borne toward organized labor.

New England Mill Situation

TIDINGS from the cotton mills of New England remain of mixed character, though more on the favorable than the unfavorable side, in line with the rest of the industry. The business done ran into the same lull in October that the industry suffered at large, but backlogs were sufficient to maintain improved operations relative to last year and the pick-up in November was encouraging for further broadening.

Statistics of forwardings of cotton, by the New York Cotton Exchange, have reflected the larger activity of mills North in 1935 compared with 1934. The forwardings to the middle of November, from August 1, aggregated 260,000 bales. These compared with 223,000 the same period of last season. The movement was far behind that in 1933, however, which was 324,000 bales.

Typical of trading conditions, the market in Fall River showed a decline for a few weeks beginning in the middle of October, but this followed a vigorous turn-over in the early fall. Some business was refused at the end of the active period, because deliveries were not available for the remainder of the year. Prices held firm thereafter, however, with mills well situated to hold and determined to keep production well in hand.

In relation to consumption of cotton, the New England share of the best October total since the depression has been minimized by the idleness of such plants as the Naumkeag and the Amoskeag. The situation of the latter was still uncertain in the middle of November, but that of the Naumkeag was adjusted. The re-opening of the Naumkeag and announcements of resumption by some other important New England units were developments of the past month indicative of the improved mill position and prospects.

While mills in October were talking of possible curtailment in case of prolonged lull in activity, the mid-November reports of the Fall River goods market were healthy. A substantial improvement of demand was noted and with increased sales was a stronger tone to values for goods. Thus the need for contemplated new restriction of output was stilled.

Conditions for the mills of Fall River have been broadly improved by the co-operation of the city in abating taxes. During the first part of November abatements were made to six or more textile corporations, amounting to many thousands in taxes through reductions to hundreds of thousands in valuations of properties. The city counts upon a return in broadened employment of operatives. A long list of companies now have received abatements.

After a strike of twelve weeks, the workers of the Naumkeag Steam Cotton Company, Salem and Peabody, Mass., went back to work on October 22 and the wage dispute was left to arbitration. The decision was in favor of the company, under the ruling a cut of 11 per cent being put into effect the second week of November.

It works out, however, that there is no decline in the weekly payroll. The workers were on 32 hours a week when the strike was started. The mills have put them on a 40-hour week, as a result of the active market for sheets and allied products. Furthermore, they have taken on 200 additional workers, making the number of employees about 2300.

In the fine goods center of New Bedford, some of the mills were reported running night shifts in certain departments around the middle of November, because of pressing orders. The outlook was considered fairly bright. Among the encouraging signs was the prospect that the Wamsutta company would re-open a unit employing 400 workers, on cotton and rayon goods.

From Maine it was reported that the Lockwood Company of Waterville, which voted last July to expend $250,000 for new machinery, was apparently carrying out its program of improvement. Much new equipment had been added in the past few months and the company was getting operations under way. The number of workers was to be increased from 250.

Payrolls in Rhode Island for October were significant of wider mill operations. A gain of 5.4 per cent over September and 3.3 per cent over October of 1934 was made by the cotton industry. The agents for the B. B. & R. Knight Corporation reported an active demand for its varied line of products. Col. G. Edward Buxton, well known president of that organization, has resigned that position and been made chairman of the board. S. Bruce Smart, treasurer, became president.

COMMENT ON THE COTTON MARKET

New Orleans, November 16, 1935.

THE TREND of the cotton market remained upward during the past month. Absorbing all hedging and offerings apparently with ease, values moved into new high ground for thus far this season during the past week owing to the stimulating influence of the continuance of a good spot demand. Compared with one month ago Middling cotton in New Orleans shows an enhancement in value of about $5.00 per bale. Today the average price of middling at the ten designated markets is 12.10, or slightly higher than the price (12 cents) guaranteed the farmer by the government.

Contributing to the further important rise in the market were extenuations of the many influences that were developing earlier in the season, viz: the necessity of replenishing the then near depleted reserves of American and foreign abroad, unfavorable weather in the South, light ginnings, reduced American and Brazilian crop estimates, plus larger consumption.

Progress of the American Crop

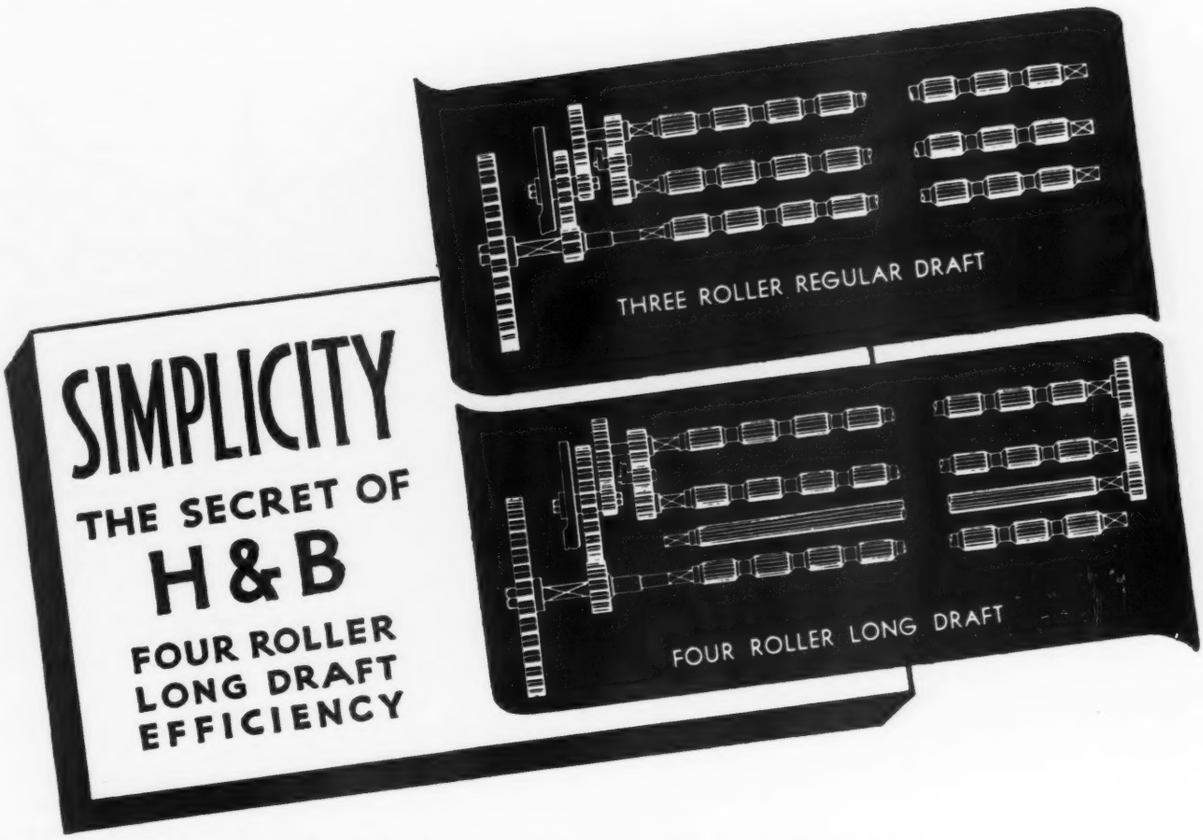
As the season progressed, official forecasts of the American crop were reduced. As of August 1st the indicated production was 11,798,000 bales: as of September 1st 11,489,000; as of October 1st 11,464,000, and as of November 1st 11,141,000 bales.

TOTAL AVERAGE RAINFALL IN TEXAS, IN INCHES

Year—	1935	1934	1933	1932	Normal
For October	2.38	0.43	1.24	0.93	2.76
For twelve months	38.48	24.16	27.33	35.89	30.94

Washington's summary, for week ended November 12 stated in part: "Continued rains in northern Texas, Arkansas and Oklahoma were unfavorable for picking cotton and more or less lint damage is reported."

During the period, August to October inclusive, domestic consumption of lint was as follows: in August 408,410 bales, in September 449,126, in October 552,187. For October last



THREE-ROLLER Regular Draft Spinning has survived the test of time for well over a century, because of its simplicity. It has been easy to clean and care for and has produced a yarn of good commercial quality with an investment and maintenance cost that is commensurate with the results obtained. This record of achievement by three-roller spinning is reason enough for retaining its simplicity features, in any attempt to improve on its efficiency.

This fact was our guiding principle in determining on a four-roller long draft system to meet the need of the cotton industry for lower manufacturing costs with equal or improved quality.

An increase in the number of mills adopting our system during the past year and sizable repeat orders lead us to believe that we have adequately met the need.

H & B Four-Roller Long Draft effectually controls a large percentage of the shorter fibres in the roving, as well as the long fibres, and yet permits sufficient freedom to effect proper distribution. This is accomplished by the elimination of belts that hamper the natural movement of the fibres. Roller No. 2 in the H & B system performs the same function as do belts in other systems. It prevents sagging and controls the shorter fibres. However it does not interfere with their natural movement, because it makes a single point contact rather than a continuous contact. Furthermore the bite of this roll is not carried so near to the front roll as in belt systems, so that a natural arrangement of the fibres occurs and "plucking" is prevented.

Note also that, in this four-roller system, fly (and other waste) has an opportunity to fall clear. It does not bunch up and is not carried into the yarn.

H & B Long Draft meets all requirements as to simplicity to an exceptional degree. Its maintenance cost is about the same as that of a three-roller system and it compares favorably with the latter as to ease of cleaning. Also investment cost is commensurate with the results obtained.

Further details on request.

H&B

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FOUR ROLLER LONG DRAFT SYSTEM

season domestic consumption was 523,032.

These developments were constructive so far as values for raw cotton are concerned, and being of a bullish nature, evidently were partly instrumental in bringing about a higher price for the staple. In some quarters the belief is entertained that the crop may not be as large as the November forecast unless there be an upward revision in the acreage. These views are based mainly on the light ginnings to November 1st and the unfavorable weather, rain and low temperatures, meanwhile, especially in the Southwest where the crop is late in maturing.

Ginning Comparatives

To November 1st— Bales—	This season	Last season
Running bales, counting round as half bales	7,749,635	7,917,671
Indicated crop, bales of 500 lbs. gross wt..	11,141,000	9,636,000

With the market now above the 12-cent level for Middling, and since sales of raw cotton at the reporting southern markets thus far this season total about 900,000 bales larger than to the corresponding date last season, it is possible that there may be some let-up, if only temporary, in the demand for the American product. But as yet American cotton continues in good request at the reported highest basis of the season.

Exports Increasing

During the past week shipments from the United States were twice as large as they were during the corresponding week of last year—276,000 bales versus 132,000, making the total thus far this season, or to November 15, 1,950,000 bales versus 1,706,000 to even date last season, distributed as follows: to Great Britain 476,000 versus 222,000, to the Continent 904,000 against 756,000, to the Orient 522,000 versus 657,000, and to Canada 57,000 against 71,000.

The movement to market continues free. During the past week 585,000 bales came into sight versus 379,000 for corresponding week of last season, making the total to November 15th 7,449,000 against 5,471,000 for corresponding period last season. Usually a heavy movement is indicative of a free export movement, and it is likely that shipments from the United States will continue of larger proportions for some weeks to come.

BRITISH BOARD OF TRADE REPORT FOR OCTOBER

Year—	1935	1934	1933
Exports of yarn, pounds	13,000,000	11,000,000	12,000,000
Exports of cloth, yards	161,000,000	176,000,000	156,000,000

CENSUS REPORT

United States— Bales—	This season	Last season
Consumption of lint, October	552,187	523,032
For three months	1,409,723	1,236,669
Mill stocks, October 31st	1,074,405	1,140,493
Stocks in public storage and warehouses, October 31st	8,481,901	9,380,804
Stocks in mills, public storage and warehouses, October 31st	9,556,306	10,521,297
Stocks in mills, public storage and warehouses, September 30th	7,865,458	8,674,964
Active spindles during October	23,192,602	25,103,884
Active spindles during September	22,683,818	22,111,932
Consumption of lint in cotton growing states, October	459,176	412,302
In New England States	76,439	89,646
In All Other States	16,572	21,084
In the United States	552,187	523,032
In Cotton Growing States, 3 months	1,180,513	987,693
In New England States	186,498	195,200
In All Other States	42,712	53,776
In the United States	1,409,723	1,236,669

Compared with last year, as of November 15, spinners' takings of American the past week were 392,000 bales versus 339,000, making total takings of American by the world thus far this season 3,884,000 against 3,484,000. Since exports promise to continue free, world takings of American are likely to continue liberal for some time to come. The stock at all United States ports November 15 was 2,970,000 bales versus 3,171,000 last year.

WORLD'S VISIBLE SUPPLY OF COTTON

November 15— Bales—	This year	Last year
American	7,069,000	7,595,000
Other kinds	1,259,000	1,944,000
All kinds	8,328,000	9,539,000

As yet not much is known of foreign crop prospects, except that, compared with last season, the Indian yield promises larger, the Egyptian somewhat smaller, and that recent heavy rains have caused a reduction in private estimates of the northern Brazil crop of 10 to 20 per cent from earlier estimates.

The situation at present looks encouraging, but the outlook for the future is rather uncertain. Encouragement is derived from improving trade accounts, from the continuance of a good demand for spots in the South, from the better tone of late from the Northern goods markets, from prospects for the continuance of liberal exports and spinners' takings, from less favorable crop reports from Brazil and from the recent strength of the Egyptian market. However, the uncertainty of the European political situation has to be reckoned with, and of late there have been rumors to effect that some of the government's pool cotton may be offered to the trade in the not far distant future, and there is the uncertainty attending the decision to be rendered by the United States Supreme Court when it passes on the AAA and the Bankhead Cotton Act.

What the Southern Mills Are Doing

Rock Hill Printing & Finishing Co., Rock Hill, S. C., is building a two-story addition to the plant which will contain approximately 90,000 square feet of additional floor space for processing equipment. The cost will be approximately $150,000.

Contract for re-roofing the main mill building of the Clinchfield Mfg. Co., Marion, N. C., has been awarded to Fiske-Carter Construction Company, Greenville, S. C.

Spray Woolen Mills plant of Carolina Cotton & Woolen Mills Company, Spray, N. C., are erecting a new power plant which will serve this mill and the Rhode Island mill of the same company, also at Spray.

Dixie Throwing Company, Greensboro, N. C., has completed an addition, 70x96 feet, in which additional machinery will be installed.

Fiske-Carter Construction Company, Greenville, S. C., has been awarded contract for the erection of an addition to Union Bleachery, Greenville, S. C., which will be two stories high and contain 12,000 square feet of floor space. J. E. Sirrine & Company are the engineers. Printing machinery for Palmetto Print Works, to be operated in connection with Union Bleachery, is also being installed.

Brookside Mills, Knoxville, Tenn., recently purchased 450 new Draper looms for weaving rayon.

It is understood that Dunean Mills, Greenville, S. C., are contemplating confining their production to rayon and silk goods.

Dale Cotton Mills, Ozark, Ala., have been acquired by Cowikee Mills, Eufaula, Ala. No announcement as to operation or disposition of the property has been made.

Archer Hosiery Mills, Columbus, Ga., have awarded contract to J. P. Bradfield, of Columbus, for an addition to the plant, consisting of the construction of an additional story on the present office building, and the erection of a new boiler room.

Currie Hosiery Mills, Carthage, N. C., have been incorporated with a capital of $50,000 by W. H. and E. W. Currie and G. P. Thomas.

Chipman-LaCrosse Hosiery Mills, of East Flat Rock, N. C., have leased a building with 20,000 square feet of floor space in Hendersonville, N. C., where a branch plant will be operated, manufacturing half-hose of the wrap style construction.

It is reported that 25 machines will be added to the equipment of the hosiery mill being erected at Rockingham, N. C., by John Everett and Sigurd Johnson, for the manufacture of half hose.

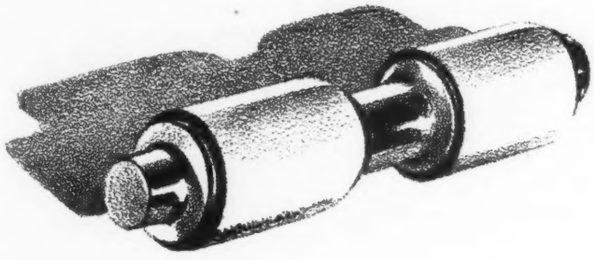
A new addition is being built to the Stanfield Hosiery Mill, Stanfield, N. C., and 30 knitting machines will be installed.

Iredell Finishing Co. is the name of a new hosiery dyeing and finishing plant at Statesville, N. C. D. Van Horn is manager.

An addition has been erected at the plant of Dobson-Miller Corp., Pulaski, Va., and 40 new machines for manufacturing infants' hosiery will be installed.

SPINNA CALF

Figures obtained from actual operating are bearing out our claims. We can report more new mills going on to Spinna Calf than at any time during our experience.



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A. C. LAWRENCE LEATHER CO.

Specialists in Textile Leathers

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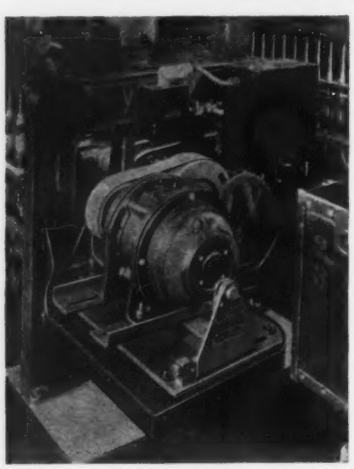
Fabric *Quality* begins with the *Yarn*

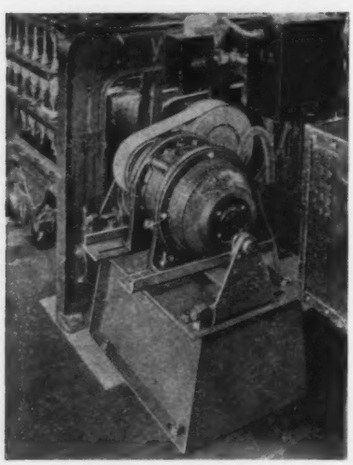
New Textile Equipment and Publications . . .

Tension Control for Spinning Frame Drives

An "American" tension control motor base, specifically designed for application on spinning frames and twisters, has been announced by The American Pulley Company, Philadelphia, Pa. This base, which utilizes the reaction torque of the motor, automatically changes belt tension to match changing load conditions. By providing tension that is in correct proportion to every load, it is pointed out, the base produces reductions of 50 per cent in average belt tensions and bearing pressures, with corresponding reductions in maintenance and replacement expense.

In this design, the tension control motor base has been made particularly compact and the motor arms have been shortened to avoid projecting into the aisles. Either v-belts or flat belts may be used with these bases, providing flexibility of operation and cleanliness. The base may be mounted on the end bracket furnished by the frame manufacturer, as shown in Fig. 1 herewith; or on a special steel floor pedestal which is not attached to the spinning frame and which is designed by The American Pulley Company, as shown in Fig. 2; or on a special end bracket, Fig 3, which is also designed by the company.





Above, Fig. 1, end bracket mounting; below, Fig. 2, special floor pedestal

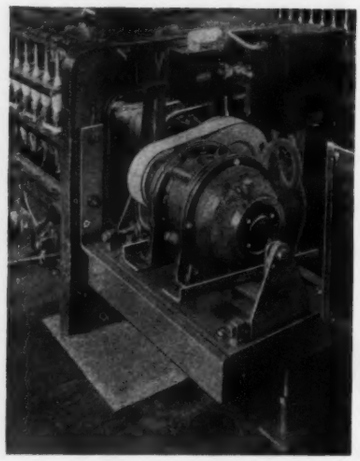


Fig. 3, special end bracket mounting

New 45th Annual Edition of Davison's Knit Goods Trade

Davison Publishing Co., 50 Union Square, New York City, have announced the completion of the 45th annual edition of "Davison's Knit Goods Trade", the only annual knit goods register. This enlarged edition shows a careful revision of over 2,000 separate reports on knit goods manufacturers and on about 700 spinners of knitting yarns. It contains almost 400 separate advertising announcements as well as an extensive buyers' guide section covering knitting mill machinery, supplies and services.

Almost 800 pages cover the entire industry—first reporting the mills geographically, then classifying them by product made. All manufacturers in the knit goods industry, including spinners and dyers, are reported in full. Over 1,500 wholesalers of knit goods with buyers' names by departments are also reported, as well as about 1,900 department stores with their knit goods buyers. In addition, about 600 chain store organizations are given with the number of stores operated and the buying headquarters.

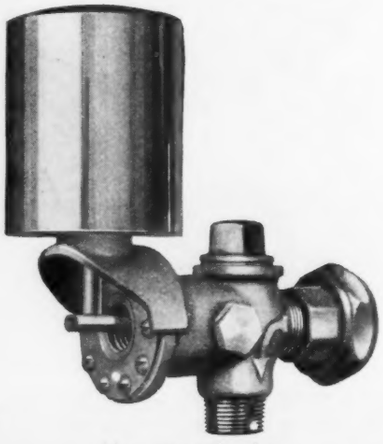
There are also sections devoted to some 600 dealers in knitting yarns, 141 raw silk, 119 thrown silk, 140 silk yarn and 257 dealers in rayon and other synthetic fibers. Reports on 201 commission throwing plants are included, and another large section is devoted to 546 reports on manufacturers' agents. A separate list of 591 knitting mills operating their own dyehouses is given. A list of 716 New York City salesrooms of manufacturers, an alphabetical list of New York buyers, plus another list of 91 separate firms, is included. Another useful section is devoted to listing the names and owners of over 500 knit goods brands and trademarks.

The price of the deluxe office edition of the directory is $6, and, in the thin paper handy edition, $5. Both editions are thumb-indexed for quick reference and bound in quality cloth. The book may be secured from the publishers, or through Cotton.

New Control Valve

Lammert & Mann Co., 270 North Wood St., Chicago, Ill., have developed a line of new control or automatic shut-off valves containing interchangeable elements for air control, steam-pressure control, water-pressure control or electrical control. Any of these controls is connected by merely screwing it into the standard valve-body mechanism. The valves may be adapted to automatic operation, remote control, or automatic operation plus an interlock with a manual-reset device.

The valve itself has only two moving parts and is held firmly in position, when closed, by a cadmium-plated spring. The valve needle and seat are of stainless steel, and all other parts are also of non-corrosive metals Any part of the valve may be removed in a few seconds, without detaching the



New control valve

When you install G-E totally enclosed loom motors in your mill, you profit by lower over-all weaving costs because, electrically and mechanically, these motors are designed specifically for loom service. They have high efficiency and power-factor. Ample capacity provides for peak loads and for the breaking-in period and assures cool operation of the motor under normal conditions. As the motor is *totally enclosed*, no dust or lint can enter it. There is no objectionable air discharge near the warp. For further information, address General Electric, Schenectady, N. Y.

CHECK THESE DESIGN FEATURES

They give you exceptional performance, long motor life, and low maintenance

One-piece end shields lower expense of inspecting windings.

Removal permits full inspection of windings without disturbing motor mounting.

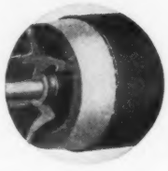
Accurately machined for concentric location of rotor.

Vibration-resisting stator keeps winding-repair costs low.

Laminations and frame securely clamped and riveted—cannot shift.

Rigid end frames assure permanent alignment.

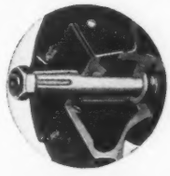
Stator-grounding lead provided.



Cast-aluminum rotor reduces rotor service costs.

No joints, no fans—nothing to work loose.

Rotor pressed and keyed on shaft for high mechanical strength.



Waste-packed bearings, accessible from outside, reduce servicing costs.

Large window for proper waste contact on top of shaft.

Removal of end shield unnecessary for examination of waste packing.

Lubricating system assures long service and low maintenance.

Twin filling holes allow oiling from either side of motor.

Easy to check oil level.

Filling holes—fitted with screw plugs—located so oil cannot overflow into motor.

Drain plug makes flushing and cleaning easy.

Sturdy pedestal-mounted control switch gives long, trouble-free service.

Heavy construction of contacts and moving parts assures long life.

Easily reset overload protection reduces maintenance and time loss.

020-228

GENERAL ELECTRIC

valve from the line, it is explained. The operating lever, which is actuated by the control device, transmits the force to lift the needle valve. A packless gland in the form of a brass bellows is used. The interlock and manual-reset device is a latch-and-weight arrangement to hold the valve in position after it has closed, until the weight has been re-set manually.

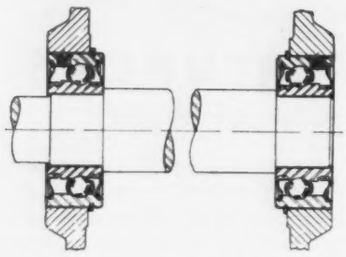
The valves are made in standard sizes from ⅜-inch up.

New Type Speed Steel Produced by Jessop

The Jessop Steel Co., Washington, Pa., has announced that under a license agreement with the Cleveland Twist Drill Co., Cleveland, holder of patent covering Mo-Max type of Molybdenum high-speed steel, it is producing the same type of steel under the trade name of Mogul. This steel entails the use of only a small quantity of tungsten and of relatively high amounts of molybdenum.

New Enclosed Cartridge-Type Ball Bearing

The Norma-Hoffmann Bearings Corp., Stamford, Conn., have announced an addition to its line of self-protected precision bearings, in the form of a completely enclosed cartridge type single-row unit designated as the 3000 series. This series, although having but one row of balls, has inner and



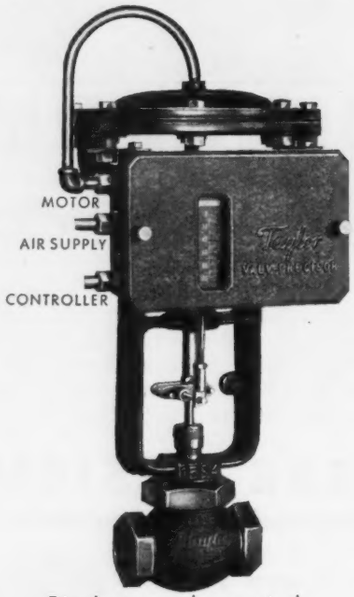
Opposed mounting using snap wires on bearings . . . .

outer rings of standard double-row width. The bearing is completely enclosed, and protected on both sides by metal seals of special design held in place by snap rings in the outer race. These metal seals have a long inwardly projecting flange with a close running fit over the grooved and recessed inner rings, to form, without rubbing friction and wear, an effective and permanent seal against the escape of lubricant. The metal sealing plates are readily removable. The bearing is handled as a complete, self-protected cartridge unit at all times. The wide inner and outer rings, it is explained, afford large grease capacity, and obviate looseness or "peening" of either shaft or housing. In most cases, lock nuts on the shaft are not required.

These new bearings are available with or without a filling plug for grease removal. Where the filling plug is not employed, re-greasing may be effected by removing and replacing one seal. The bearing is available, also, with or without the snap ring on the outer race. The bearing is made chiefly in the medium series starting at 25 m.m. bore.

"Valv-Precisor"

Taylor Instrument Companies, Rochester, N. Y., have developed the "Valv-Precisor", a control for supplying precision-valve-action to any diaphragm valve. In it the precision-valve action feature of the Taylor "Dubl-Response" control unit, an auxiliary control device designed primarily to accurately



Diaphragm valve control

compensate for changes in load was utilized for applications where load changes are not a problem but valve-stem friction and diaphragm-motor hysteresis must be overcome to obtain precision control. The device is designed for all processes which have time lags or heat capacities demanding a low or medium controller sensitivity, provided that load changes are negligible or infrequent. It is not offered for processes with short time lags permitting a high controller sensitivity or on processes involving large time lags and load changes. The "Valve-Precisor" is a compact unit (case dimensions 8x5x2 inches) which can be mounted on any diaphragm valve, and can be used in conjunction with any air-operated controller. However, it is pointed out, it must be so located on the diaphragm valve that a direct, rigid connection always is maintained with the valve stem. A 25 pounds per square inch air or gas supply is recommended for most efficient operation. A non-corrosive case and cover protect the mechanism. The only necessary adjustment is to adapt the mechanism to the full travel of the valve stem. An indicator showing the actual percentage of valve opening is visible through a small glass window.

New Publication on Compensated Belt

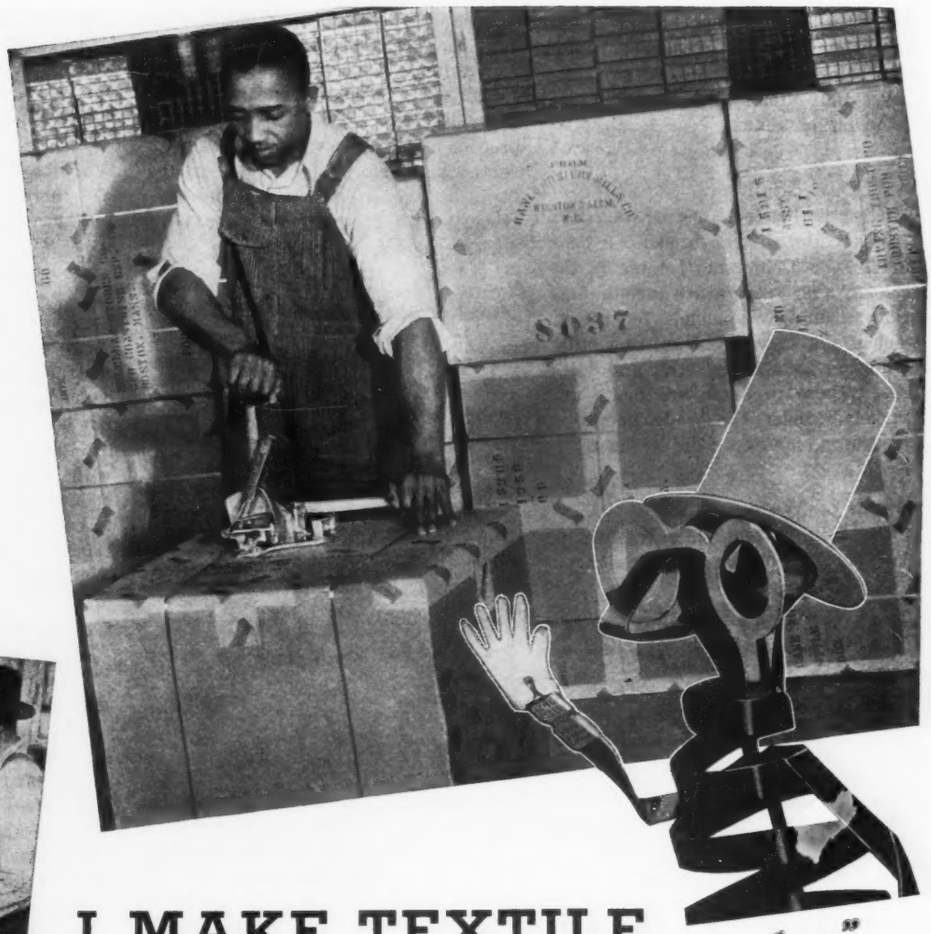
The Manhattan Rubber Manufacturing Division, Raybestos-Manhattan, Inc., Passaic, N. J., has just issued a new bulletin, No. 6808-B, describing and explaining the details of the construction of Condor "Compensated Belt". Numerous interesting installation views show the wide applications of this belt, and charts and diagrams illustrate technical data of interest to flat belt users. The belt embodies two new principles, it is explained—one is the placing of the plies in such a manner that when flexed around the pulley, where the most strain occurs, each ply receives an equal amount of stress, eliminating ply ruptures and early fastener failures; the other is the low tension pulley surface to permit the belt to run at very low tension.

Line of Duro-Brace Texsteel Sheaves Is Extended

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, have provided additional stock sizes for their line of Duro-Brace texsteel sheaves for v-belt drives up to 15-hp. The grooves in the entire texsteel line are so designed that they can be used with A section belts (½x11/32") or with B section belts (21/32x7/16") depending on the application. The standard line now includes 25 different diameters of sheaves from 3-inch up to 18-inch inclusive, for any number of grooves from 2 to 6 inclusive, or 125 different Duro-Brace texsteel sheaves. All of these sheaves are available with interchangeable type hubs which are carried in stock with bores in 1/16-inch increments from ½-inch up to the maximum bore.

New Unit Heaters

Modine Manufacturing Co., Racine, Wis., have added four new models to their line of unit heaters, whirh feature the "direct-from-steam-pipe suspension" designed to provide convenient, economical installation. This feature also facilitates re-direction of the heated air steam and permits 360-degree rotability. The new design includes the "expansion-bend" feature making possible the individual expan-



Faster work, stronger bales, better looking bales, with Acme Bale Ties and Seals.

I MAKE TEXTILE SHIPMENTS "Bound to get there" ECONOMICALLY

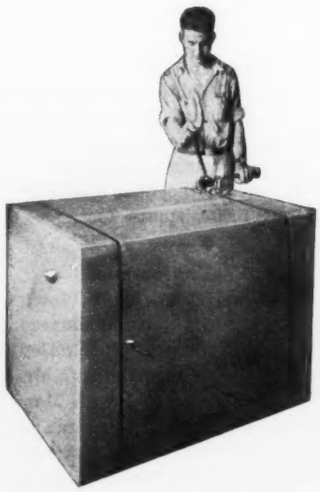
All you folks shipping textiles—whether in bales, cases, or what not—can save some money! That is, if you're not already using Acme Steelstrap. Hundreds of mills have been using this reinforcing band for years.

Scientifically administered, Acme Steelstrap permits the use of lighter "packages" without sacrificing strength. Closure of packages can be speeded up, better looking shipments obtained.

And now, I'm wrapping Steelstrap in a patented, waterproof package called "Acme Annular Wrap"—so that it reaches you perfectly clean. Soiling of products is avoided.

Write me about your shipping packages. I'll be pleased to send you tools, seals and strap for trial. I can show you the way to make your products "Bound to get there" economically.

Doc. *Steelstrap*



Corrugated boxes are made snug and strong—to carry as much as 200 pounds of textiles—with Acme Steelstrap. Wood cases, too, are benefited by my Steelstrap treatments.

Acme Steelstrap

ACME STEEL COMPANY · GENERAL OFFICES: 2847 ARCHER AVE., CHICAGO

ATLANTA · NEW ORLEANS · SAN FRANCISCO · BOSTON · BROOKLYN

sion of each of the separate tubes and preventing unequal expansion strain from being transferred directly to the tanks and eliminating the resultant distortion of tanks.

Booklet on Detergents

Detergent Products Corporation, Box 1725, Atlanta, Ga., have issued a book on "Textile Detergents", covering the company's products which include high grade cleaning compounds for cotton, woolen, silk, rayon and knitting mills, dyeing and finishing, etc., and their uses. These products are made and marketed under the trade names of Depurator and Neutralite products.

Patents on Waterproofing

The U. S. patent office recently issued new patents on waterproofing of textiles (No. 2,015,864 and 2,015,865), to Erba, A. G. Chemical Works, of Zurich, Switzerland, whose affiliate in this country is Warwick Chemical Co., West Warwick, R. I. The patents cover a process of waterproofing textiles with emulsion which is discharged on the fibers by reason of their opposite electrical load. The patents cover Warwick's product, Impregnole.

New Koroseal Bulletin

As a supplement to their recent announcement concerning a new synthetic rubber-like material known as Koroseal, The B. F. Goodrich Company, Akron, Ohio, have just released a 12-page illustrated bulletin describing the various properties of this unusual product, listing the various forms in which it is available and the uses for which it has been successfully adapted.

TIMELY NEWS ITEMS WITH A TEXTILE SLANT . . . .

Open Charlotte Office

Chicago Mill and Lumber Company, Chicago, Ill., and Plymouth Box and Panel Co., Plymouth, N. C., have announced the opening of a Southeastern Sales Office at 614 Johnston Building, Charlotte, N. C. E. J. Mueller and C. P. Semmlow constitute the sales personnel of this office which was established for rendering service to southern industry on plywood boxes and other wood shipping boxes and crates.

Republic Rubber Company Holds Sales Conference

The annual sales conference of the Republic Rubber Company was held for three days during the latter part of October. The conference was held under the direction of O. S. Dollison, vice-president in charge of sales, with discussions on various topics led by H. P. Schultz, sales manager, E. M. Ikirt, treasurer, R. J. Gattshall, manager distributor sales, H. W. Croysdale, factory manager, C. H. Zieme, service engineer and A. Brill, development manager. During the meeting several new products were introduced to the sales organization, including a new improved molded and braided pneumatic hose to be introduced under the old Tower brand name, and an addition to the transmission belt line of Super-Flex belting, especially designed for high speed and small pulley work. Discussions were also carried on concerning the use of new rubber substitutes for particular services, as well as new applications developing for the use of mechanical rubber goods.

The conference marked the close of a successful year for the organization, in which sales exceeded quotas established in a highly satisfactory degree. During the meeting plans were outlined for an expanded sales and advertising program for the coming year.

Open Providence Office

American Aniline Products Inc., 50 Union Square, New York City, have announced the opening of a branch office, laboratory and warehouse at 55 Pine Street, Providence, R. I., to facilitate deliveries and service to the mills of Rhode Island.

Group at Republic Rubber sales conference . . .

Warwick Chemical Company Increases Sales Force

Warwick Chemical Co., West Warwick, R. I., has announced an increase in its southern sales force and a division of southern territory. W. E. H. Searcy, III, who has been covering the entire southern territory, is now concentrating his efforts on Georgia, Alabama, and a part of South Carolina. His headquarters as before are in Griffin, Ga. Earl H. Walker, formerly with Solvay Sales Corporation, has opened headquarters in Concord, N. C., to cover part of South Carolina, North Carolina, Virginia and Tennessee for Warwick Chemical Company.

Carpenter Inspects Plants

Major A. E. Carpenter, president of E. F. Houghton & Co., oil and leather manufacturers, Philadelphia, Pa., recently made an inspection trip of the branch plants of the company located in Chicago and Detroit. Recent improvements and additions to the facilities of the company in those cities were given a final inspection in preparation for an anticipated upturn in general business. An addition to the Philadelphia plant, in the form of new executive offices and increased storage and shipping space, has just been completed. The Canadian sudsidiary, E. F. Houghton and Company of Canada, Ltd., Toronto, Canada, has been growing to such an extent that it has been necessary to increase its manufacturing capacity including a sulphonating plant for direct service to the textile and tanning industries in Canada.

Bahan Enlarges

Bahan Textile Machinery Company, Greenville, S. C., manufacturers of textile machinery, supplies and parts, are erecting an addition to their plant which will increase the floor space by approximately 5,000 square feet.

Lindsey With Wellington-Sears

Wellington-Sears Company, 65 Worth Street, New York City, have announced the addition of Clarence W. Lindsey to their fine goods department. Mr. Lindsey has been connected with Marshall-Field & Company for 14 years and for the past five years was manager of their silk, rayon and woolen departments. Mr. Lindsey assumed his new duties at Wellington-Sears & Co., in October, and is active in the development of fine synthetic yarn fabrics.

Personal Notes

(*Continued from page 72*)

business manager. His more recent activity has been in the advertising agency field, both on general accounts and in specialized service to industrial advertisers.

W. P. CARGILL has resigned as superintendent of the Wetumpka (Ala.) unit of Alabama Mills, Inc., to become manager of the Bradford Cotton Mills, Prattville, Ala., and has assumed his new duties. He is succeeded at Wetumpka by TOM OLIVER, formerly overseer of weaving.

J. L. BEARD, superintendent of weaving at the Riverside Division of the Riverside and Dan River Cotton Mills, Danville, Va., has been made also superintendent of dressing at this division.

BEN S. PEARSON, formerly general overseer at Riverside Mill No. 2, Gossett Mills, Anderson, S. C., is now connected with the Anderson Cotton Mills, Anderson, S. C., as overseer of carding on the second shift.

ROBERT RAY HOOD, formerly overseer of weaving at the Brandon Corp., Greenville, S. C., but more recently cost man at the Tucapau Mills, Tucapau, S. C., is now office manager of the Pelzer Manufacturing Co., Pelzer, S. C.

Obituary

W. K. MOORE, president of the Crown Cotton Mills, Dalton, Ga., passed away on Sunday, December 1, after an illness of a few weeks, following a heart attack. In his death, the textile industry loses one of its really great leaders. Gifted with a graciousness and charm which endeared him to everyone, his influence as a man was truly a beneficience to all of those who came in contact with him—contemporaries, customers, salesmen, mill operatives, all respected and admired his strength of character, fair dealings, and deep philosophy of life, which permeated his every act and deed. An eminently successful business man, a leader in civic and religious affairs of his community, Mr. Will Moore typified the true southern Christian gentleman, and in a quiet, unassuming manner, with the modesty characteristic of true greatness, lived a life of service and achievement.

Mr. Moore was 59 years of age. He is survived by Mrs. Moore and three sisters. In 1934-35, he served as president of the Cotton Manufacturers Association of Georgia.

I BUY CLOSE

They tell me I "buy close" when it comes to purchasing supplies. Perhaps so, but the "P. A." title doesn't mean that I must try to get something for nothing. I know it can't be done. I am, however, a careful buyer. And that is why I always buy Hinde & Dauch shipping boxes. Without a doubt, H & D boxes offer textile manufacturers the greatest value on the market. They protect our shipments—yes! They also help market the product by handsome packaging. Take a tip from a friend—write them the next time you're in the market.

Send FOR YOUR COPY NOW!

THE HINDE & DAUCH PAPER CO.
454 Decatur Street, Sandusky, Ohio
Send me your book "Modern Box Design"
Name _____
Company _____
Address _____
City _____ State _____

PERSONAL NOTES
about Men You Know

J. C. PLATT has become agent of the Chicopee Mfg. Corporation, at Gainesville, Ga., succeeding MARION T. GRIMES. Mr. Platt for the past several years has been agent and superintendent at the Aragon Mills, Aragon, Ga. He is a graduate in textiles of the Georgia School of Technology, Atlanta. HARRY H. PURVIS continues as superintendent at the Chicopee Mfg. Corporation. J. C. EDWARDS, JR., has been made master mechanic.

J. C. Platt

C. A. TOWNES, formerly cashier, has been appointed assistant treasurer at Aragon Mills, Aragon, Ga.

JULIAN M. LONGLEY, formerly assistant superintendent of The Dixie Cotton Mills, LaGrange, Ga., is now assistant superintendent of the Langdale Mill Division, West Point Manufacturing Company, Langdale, Ala., succeeding A. C. BOYD, who is now a sales representative for The Clinton Company, Clinton, Iowa.

CLYDE CRONIC, formerly overseer of weaving at the Oakleaf Plant of Callaway Mills, at LaGrange, has been transferred to overseer of weaving at the Manchester Plant of the same company, Manchester, Ga., succeeding WALTER S. WHISNANT.

JESSE MADDOX, of LaGrange, has been made overseer at Oakleaf Plant, succeeding Mr. Cronic.

CLARENCE SMITH, overseer of spinning at the Unity Plant of Callaway Mills at LaGrange, has been transferred to Manchester as overseer of spinning succeeding J. F. WHARTON, resigned.

LEE THOMPSON has been transferred from the central machine shop of Callaway Mills, LaGrange, to Manchester Plant, Manchester, Ga., as master mechanic, succeeding the late ANDREW C. GRANT.

GEORGE B. MOORE, who resigned several months ago as superintendent of the Gainesville (Ga.) Cotton Mills, has become superintendent of the Whitney Manufacturing Co., Whitney, S. C., succeeding WALTER H. GLENN.

LUTHER H. HODGES, who was recently made general manager of the 15 mills of the Carolina Cotton & Woolen Mills, in North Carolina and Virginia, with headquarters at Spray, N. C., has been continuously associated with this affiliate of Marshall Field & Co., since starting in the office as office boy in the year 1912. He was at one time personnel director for some of the plants, later being put in charge of cost work and production at two of the blanket mills, then was assistant to the late L. W. CLARK, manager of the Spray and Draper plants. About two years ago, Mr. Hodges became, with W. D. CARTER, a joint manager of all of the properties. Mr. Carter has been transferred to the sales division in New York City, and Mr. Hodges is now general manager of all of the plants.

Luther Hodges

W. G. HARDY is now overseer of carding at the Merrimack Manufacturing Company, Huntsville, Ala., succeeding D. G. FLOYD, who has been made overseer of spinning. E. A. MADDOX, formerly overseer of weaving at the Imperial Cotton Mills, Eatonton, Ga., is now overseer of one of the weaving departments at Merrimack Manufacturing Company. P. T. O'NEILL continues as general overseer of weaving.

W. D. MASSEY, formerly at the Peerless Cotton Mills, Thomaston, Ga., and the Griffin Mills, Griffin, Ga., has become overseer of spinning at the New Braunfels Textile Mills, New Braunfels, Texas, where WALTER DILLARD, JR., was recently promoted from superintendent to manager, succeeding R. S. PORTER.

O. E. HAMER has become overseer of spinning at the mill of the U. S. Rubber Products, Inc., Hogansville, Ga.

F. M. TIDWELL has been made general superintendent of the several plants operated by J. W. Sanders Cotton Mill Company and affiliates, in Mississippi.

W. H. WHITE has resigned his position as overseer of weaving and drawing-in at Watts Mills, Laurens, S. C., to accept the position of assistant superintendent at the Drayton Mills, Spartanburg, S. C., where SMITH CROW is superintendent.

W. G. DAY has resigned as superintendent of the Cowpens Mills, Cowpens, S. C., to become assistant professor of carding and spinning at the Clemson College (S. C.) Textile School, succeeding R. L. LEE, JR., who has accepted a position in cotton testing with the U. S. Department of Agriculture, with headquarters at College Station, Texas. Both men are graduates of Clemson Textile School. For two years after graduation in 1931, Mr. Day worked in the carding division of the Lancaster (S. C.) Cotton Mills; he then became assistant superintendent of Cowpens Mills, and later was promoted to superintendent. Mr. Lee has been teaching at Clemson since 1926.

G. E. FRICK, superintendent of Yates Bleachery Company, Flintstone, Ga., has become superintendent of dyeing at Lowell Bleachery South, Plant No. 2, Griffin, Ga., succeeding LEE HILLER, resigned. JOE RICHARDSON is overseer of dyeing.

JAMES O. ELSMORE has returned to his former position as overseer of weaving at the Watts Mills, Laurens, S. C. He has recently been overseer of fancy weaving at the Springs Cotton Mills, Lancaster, S. C.

ROGER TERRELL has been promoted to second hand in weaving at Georgia-Kincaid Mills, Plant No. 5, Griffin, Ga., succeeding N. W. BOGGS, who has been made overseer of the cloth room at Plant No. 2.

J. T. HUNEYCUTT has become superintendent of the cotton mill and mercerizing plant of the Sellers Manufacturing Co., Saxahapaw, N. C., succeeding S. B. LAWS, resigned.

H. H. SIMMONS has been made advertising manager of Crane Co., 836 South Michigan Ave., Chicago, Ill. For nine years he has been vice-president and account executive of Russell T. Gray, Inc., Chicago advertising agency. After graduating from the University of Illinois in civil engineering, Mr. Simmons spent the first years of his business life in the trade publication field, serving successively as associate editor, advertising representative and

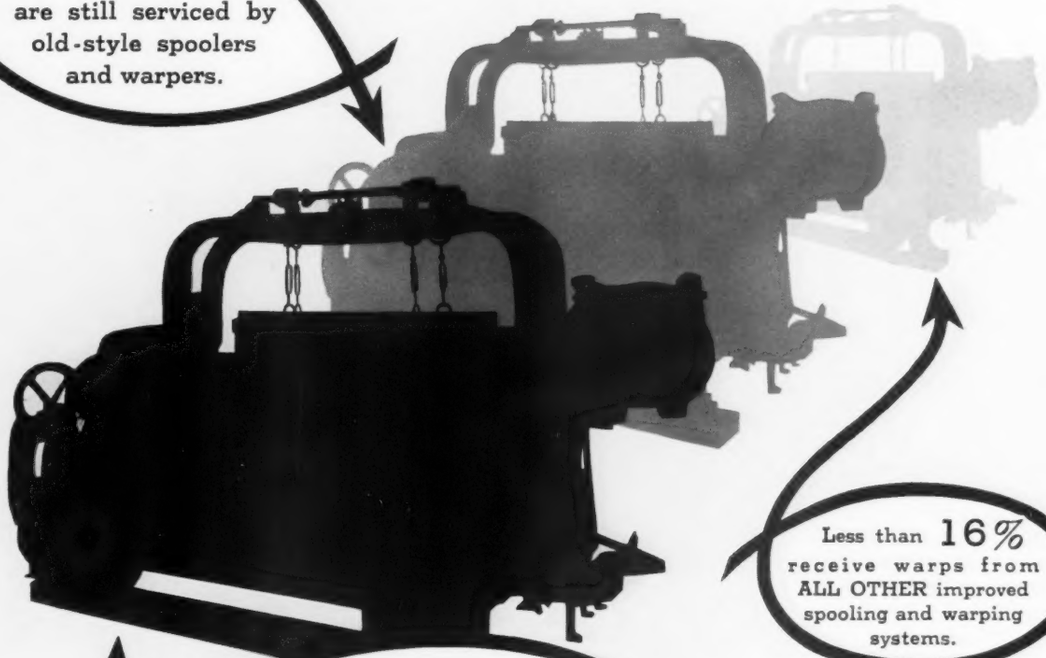
(*Continued on page* 71)

BARBER-COLMAN

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS

In southern cotton mills, **ACCURATE INFORMATION** shows that the **BARBER-COLMAN** system supplies warps to **THREE TIMES** as many looms as **ALL OTHER** improved spooling and warping systems.

36% are still serviced by old-style spoolers and warpers.



Less than **16%** receive warps from **ALL OTHER** improved spooling and warping systems.

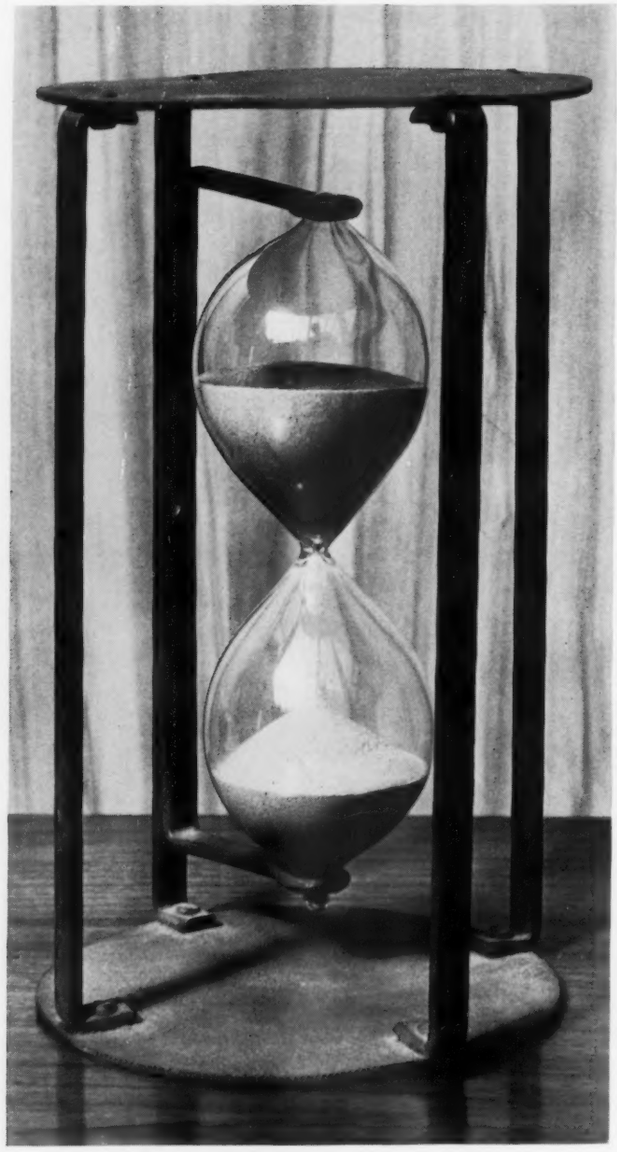
OVER 48% of all looms in southern cotton mills are supplied with warps from **BARBER-COLMAN SPOOLERS and WARPERS**

Ask for a copy of our **LIST of USERS** and note the outstanding manufacturers using Barber-Colman machines.

BARBER-COLMAN COMPANY

ROCKFORD, ILLINOIS

GREENVILLE, S. C. FRAMINGHAM, MASS.



SONOCO 37 YEARS

..... WHERE DO WE GO FROM HERE?

. . . The sands are running out . . . A few more turns of the hour glass and 1935 will have become bracketed in the past . . . What we have accomplished this year and those years preceding becomes of consequence now, only if we have learned and profited thereby . . . Where do we go from here?

As we face the new year and a future of unlimited time, the important questions are: What rate of progress are we making and in what direction are we headed? With momentum gained from an enviable record of accomplishment over the past 37 years SONOCO continues its guiding policy of exhaustive technical research toward further development of products and service.

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BRANTFORD ONT. HARTSVILLE S. C. MYSTIC CONN.

DEPENDABLE SOURCE OF SUPPLY

N. C. Mill Men Discuss Taxation and National Legislation

Harvey Moore Elected Head of North Carolina Association; Bernard Cone and Emery Speak . .

TAXATION and the centralization of governmental authority were the chief topics discussed at the annual convention of the Cotton Manufacturers Association of North Carolina, held at Pinehurst, N. C., on November 22 and 23.

Bernard M. Cone, president of the Proximity Manufacturing Co., Greensboro, N. C., presented a lucid interpretation of present and prospective tax problems, treating especially the subject of the social security legislation and the taxes imposed by it. He declared that the prospective methods of handling the funds for the social security and old-age pensions contains many evils; that the chances are that when the time for disbursing the funds comes, additional levies will be necessary.

Mr. Cone felt that, from a practical standpoint, the problem of keeping books for the new social legislation will be simpler than is generally believed; that the information required can probably be worked out from the ordinary departmental payroll records as now kept.

As to the pending Supreme Court decision regarding the processing tax, Mr. Cone expressed the hope that, whatever the decision, it will be made clearly.

James A. Emery, general counsel of the National Association of Manufacturers, made a stirring address on the theory of centralized governmental authority, attacking particularly the philosophy of licensing embodied therein. He declared that licensing "rests on the conception that engagement in foreign or domestic commerce is a privilege conferred by Congress, and not a right which pre-dates the Constitution"; that such conception of commerce power, as embodied in the National Labor Relations Act, and the Guffey Bill, tends to transform what was hitherto local into what becomes public and national. He said that to tax "bigness" is to discourage engagement in enterprise involving risk and willingness to pioneer.

Harvey W. Moore, secretary-treasurer, Brown Manufacturing Company, Concord, N. C., was elected president of the association; and Herman Cone, treasurer, Proximity Mfg. Co., Greensboro, was made first vice-president. Hunter Marshall, Jr., of Charlotte, was re-elected secretary, and Carl R. Cunningham, Atlanta, traffic manager.

Murchison Gets Acquainted

Dr. Murchison

CLAUDIUS T. MURCHISON, the newly elected president of the Cotton-Textile Institute, assumed his new duties in November. One of his first steps in orienting himself into his position was to make trips throughout the textile manufacturing area, meeting in different centers the mill executives of the respective territories. Among his first visits was included attendance at the meeting of the Cotton Manufacturers Association at Pinehurst, N. C., and he also met groups of mill men in Atlanta, Ga., and Greenville, S. C., and other points, getting acquainted and outlining the future plans and program of the Institute.

Southern Sectional Meetings of Chemists and Dyers

TWO divisions of the American Association of Textile Colorists & Chemists held their fall meetings on Saturday, November 9. The Southeastern section met at the Piedmont Hotel, Atlanta, Ga., on Saturday evening, the meeting opening with a dinner. C. A. Jones, chairman of the section, was in charge. Samuel I. Parker, of the Ciba Company, delivered an interesting paper on "A General Outline of Textile Printing", and at the conclusion of the paper, introduced R. J. Nuttall, of Lanett Bleachery & Dye Works, who supplemented Mr. Parker's paper with an interesting account of his experiences in textile printing, both in this country, and in Brazil.

C. B. Ordway, of Alabama Polytechnic Institute, chairman of the sub-committee on mercerization, gave a report of the meeting held in Chattanooga in August by this sub-committee, and the plans formulated there for the research being carried on by this group. Mr. Ordway introduced Sidney M. Edelstein, the fellowship appointee, who is conducting this work, who gave a brief outline of the progress made. The attendance totaled about 50 members and guests.

The Piedmont section met at the Hotel Charlotte, Charlotte, N. C., on the same evening. The feature speakers were B. B. Gossett, president of the Chadwick-Hoskins Company, Charlotte, and George W. Hinkle, of the Republic Steel Company. Mr. Gossett discussed current conditions in the textile industry, and Mr. Hinkle discussed "Stainless Steel in the Textile Industry", tracing the development of this material and covering its applications in textile mills, particularly in bleaching, dyeing and finishing processes. He followed his talk with the presentation of a sound motion picture, showing the manufacture of stainless steel in the Republic plants.

At this meeting, the annual election of officers was held. Chester L. Eddy, of Renfrew Bleachery, Travelers Rest, S. C., was made chairman, succeeding Paul F. Haddock of Charlotte. Tom R. Smith, of Wiscassett Mills Co., Albemarle, N. C., was made vice-chairman; R. E. Rupp, of Pacific Mills, Lyman, S. C., secretary; and L. W. Cleveland, of Swannanoa, N. C., treasurer. A trophy was presented to the retiring chairman, Mr. Haddock. Entertainment included music by a mixed octette and several dance numbers by a troupe from a local dance school.

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Profits now-a-days come from reducing production costs. That's why you cannot tolerate liquid oil that creeps from roll necks, soiling yarn—the value of which has been increased by the processes it has already gone through.

7 out of 10 mills are doing away with soiled yarn and oil rotted roll covers by using NON-FLUID OIL—the drip-less, waste-less lubricant. These mills save money on oil and application cost also, for NON-FLUID OIL outlasts liquid oil 3 to 5 times.

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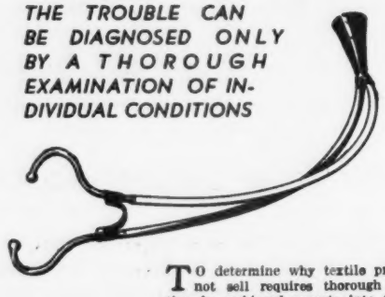
THE TROUBLE CAN BE DIAGNOSED ONLY BY A THOROUGH EXAMINATION OF INDIVIDUAL CONDITIONS



TO determine why textile products do not sell requires thorough examination by unbiased experts into the actual conditions in the mill. NORTH Service has assisted many mills in making their products more saleable. Practical mill men investigate the individual methods and systems of sizing, make laboratory tests of raw cotton, sized and unsized warp and cloth, determine moisture content, dry size and other conditions, and then cooperate in securing any desired weight or feel of cloth or whatever other requirements are needed to create greater sales in the cloth markets.

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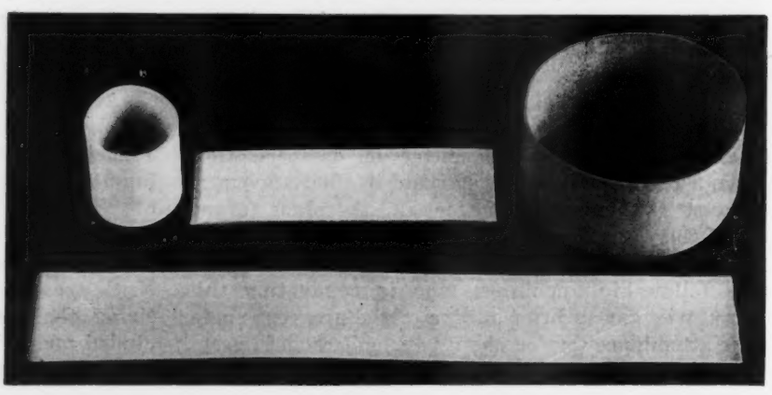

HOW OTHER MEN MANAGE

Practical Discussions by Cotton's Readers On all Varieties of Mill Subjects

Men Are More Important Than Machines and Materials

This is perhaps the most important single question in mills. Further contributions on any phase of human relations will be especially welcome for consideration for these columns . . . . . .

EDITOR COTTON:

I have noticed a number of discussions in your "HOW OTHER MEN MANAGE" Department with respect to the workers in the mill, and I do not think there is any more important subject for us to consider, because the workers, as well as the machines and materials, are of vital importance.

The following epigram should be kept in mind by all men in managerial and supervisory positions in industry: "Your greatest business asset is the people who do your work, your workers."

Just as important as getting along with all individuals charged with the duties of firm management on the right basis is the need for similar relationships with all workers. The modern management of help is a great study. The man who will make the greatest success in the mill of the future, as in the past, is he who has a good following of help and who knows how to take care of them. It requires great tact to get them fully interested and to train them to make good work. A good overseer under wise management can hold his help and make good help from raw material and also train the poorer hands to be more efficient. He needs to know how to place them to the highest advantage. As the advertiser must know human motives as well as type faces, the management must recognize the human equation and must study how to solve it.

One of your recent contributors stated that it is beyond him how any overseer can be a success by sitting reared back in his office just taking things for granted. This brought to my mind overhearing a remark made by an overseer last week, "Go through your department with a sour and mad looking face and then the help won't bother you." Is there any wonder that bad work is continually being made, and that dissatisfied help is a result? The overseer or superintendent can remember this: If you dig deep enough into the cause of your lack of success you will find it is spelled S-E-L-F. A trifle that works wonders is that the little things in life are the things that count. It is the power of the pleasant smile, the kindly word, the timely praise, and the friendly hand-clasp that makes and keeps a working group profitably and successfully on the job. Teaching and practicing courtesy is not lost among the major duties of every supervisor.

We might all well study and apply the following in our daily work:

Courteous relations of all activities in all departments.

Try to be fair and use the worker under our supervision as we would like to be used.

There are many more current expressions emphasizing the tremendous importance of team work to all worthwhile accomplishment that have their lessons for every supervisor. No organization can possibly have too much united effort in its ranks; it is a real duty for each of us to make sure that there is at least enough in our respective departments.

I find that not all experienced workers are good workers by any means, and not all workers receive the kind of training that makes them good performers and good producers in their groups. Why this is so, and what can be done by any supervisor to remedy poor training in his department, are points worthwhile giving serious personal attention.

CONTRIBUTOR No. 6317

Preventing Loom Stops on Filling Transfer Without Threads Breaking

Also discussing how to adjust the loom to prevent shuttles being bruised or scratched . . . . .

RECENTLY, a subscriber submitted the following questions for reply by Mr. Ivar Moberg:

"1. When the loom transfers the filling, the thread does not break, but the filling stop motion stops the loom. Could you please let me know what can be done to overcome the stopping?

"2. What different adjustments can be made so the shuttles do not get bruised or scratched?

"These questions refer to a Crompton & Knowles 4-box loom with the Regan warp stop motion."

Mr. Moberg's reply follows:

"In reference to the foregoing questions, I wish to say that if the inquirer had stated what kind of filling stop motions he uses rather than the type of warp stop motion, I would have been in a better position to give him a more specific reply.

"However, since he uses Crompton & Knowles 4-box looms, they are probably equipped with center filling stop motions. My reply will therefore be in reference to this kind of filling stop motion.

"There are several causes for the center filling stop motion knocking off the loom at the transfer of the bobbins. The most common are: filling too loose on transfer picks; too much force on the pick; fork

wires of stop motion too short; too much pressure on the filling by the fork; shuttle rebounding in the box; and harness motion timed too late.

"If the filling does not have sufficient tension on the first pick after the transfer of the bobbin, the stop motion will knock off the loom. It is sometimes rather difficult to get the proper tension of the filling on the first pick after the transfer, due to the fact that the filling thread is not fully threaded in the shuttle eye on that pick. The threading is first completed on the second pick after the transfer. To give a proper tension on the filling on the first pick after the transfer of the bobbins, we must use friction bristles in the shuttle. These friction bristles should not be too stiff and should be inserted at a sharp angle to the bobbin. They must also rest on the tip of the bobbin so as to give the proper tension. If they do not rest on the tip of the bobbin, there will be little if any tension from them on the filling.

"If there is too much force on the pick, the filling will unwind excessively when the shuttle comes to rest in the box and the loose filling will be unable to support the filling fork under pressure. In this case, the fork wires will force the filling down between the warp threads sufficiently to cause the knock off of the loom. To adjust the proper force on the pick, take off power until the loom bangs off and then add sufficient power to prevent the loom from banging off.

"If the fork wires in the filling stop motion do not extend sufficiently toward the reed, they will miss the filling in their descent and of course the loom will knock off. The fork wires should be extended well toward the reed so they will have no chance to miss the filling.

"Sometimes the pressure by the fork wires on the filling is too great, and this will force the filling down between the warp threads, particularly on the first pick after transferring when the filling is under less tension. On this pick the filling is also laid closer to the reed as the filling runs out from the top of the shuttle instead of from the side when it is fully threaded in the shuttle eye. The wires therefore have a tendency to miss the filling. The spring tension on the fork should be reduced as much as possible without stopping the filling stop motion from working properly.

"Should the shuttle rebound in the box, the filling will lie in the shed in waves and the fork wires will either miss the filling or press it down between the warp threads and the loom will stop. We must see that the shuttle is gently and gradually retarded when it enters the box. The retardation or checking of the shuttle should be such that it will come to a complete stop just as it touches the picker.

"It sometimes happens that the fork wires will strike the shuttle and be thrown back by it. The wires then snap back forcibly on the filling and the strain will be too great on the filling to properly support the fork wires on the first pick after transferring the bobbin when the filling does not have the proper tension. The result is that the wires drop down too far so the knock-off will not clear, and the loom stops.

"In reference to the second question, as to preventing the shuttle from getting bruised or scratched, I will say that if the reed and box backs are perfectly lined up, if the race board and the bottom of each of the boxes are adjusted so they are in level, if the lower shed is down on the race board and has the same angle as that of the race board, if the picking motion is properly adjusted so it will assure a steady flight of the shuttle without wabbling, and if the box motion is timed correctly so the boxes have time to settle down before the pick, there should be no excessive bruising and scratching of the shuttle. Also, the picker must run parallel to the race board and the picker spindle on the magazine side must not be bent as some fixers have a habit of doing.

"In answering questions of this kind it is exceedingly difficult to state just what are the real faults without seeing the loom in operation, but I trust you will appreciate this and that it is possible for me to give only a general outline of the faults that may be causing the trouble."

IVAR MOBERG.

Advice to a Young Overseer of Spinning on His First Job

EDITOR COTTON:

I recently visited the spinning room of a young friend of mine on his first overseer's job, and for the possible interest of other young men and other readers of your "HOW OTHER MEN MANAGE" Department, I should like to suggest that you publish my letter to him, as follows:

Dear Al: In compliance with your request I shall set forth herein my findings on conditions in your spinning room. It is glaringly evident that you are on a badly run-down job and you have quite a task on your hands to put it on an efficient basis.

I was amazed at the very poor quality of the sample bobbins of yarn sent me previous to my visit to your department, and needless to say, my conclusions as to actual conditions were verified after watching your work run.

The appearance of most of the yarn you are spinning indicates that you are running with inadequate humidity. The yarn is so uneven as to look almost like cut yarn. Also, it has a dry and very fuzzy appearance. No wonder your breaking strength is 20 per cent below standard. On your carded stock you should maintain a constant relative humidity of 65 per cent, and on your raw stock dyed section, 70 per cent. On account of this poor humidity and other conditions which I shall enumerate, you have to set your rolls too far apart in order to be able to run your work at all.

Another contributing factor is that you are getting very poor roving. There is unmistakable evidence that much of your roving is stretched. You have grounds for a real kick against the carding department, and until you get better roving you will not even reach first base in improving quality. When-

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PENETRATION ROLL

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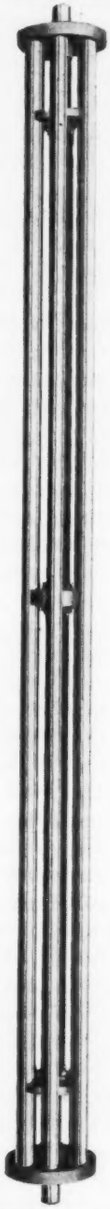

You can now be assured of real penetration in your warp sizing. The Eagle Penetration Roll allows the sizing to boil all through the yarn and penetrate every fibre.

Specially designed curved blades through the center of this roll force the size outward which hastens penetration considerably. Slasher production can be increased without decrease of regain in the sized yarn.

Careful tests prove this roll to be highly advantageous in eliminating lumps in sizing and preventing hard size spots, and that the retention of size carried through to cloth room saves cotton by enabling the mill to run a 1% lighter warp yarn with the customary filling numbers and maintain correct cloth weights.

Eagle Penetration Rolls are made to fit in any type or model slasher size box. They take the place of the usual plain immersion roll and fit into the regular immersion roll bearings. High quality brass tubing is used in their construction and the specially designed center blades are also of brass.

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ever you receive roving that has an irregular taper on the top and bottom, you can make up your mind that the speeder tender manipulated the tension rack by hand, and it goes without saying that it is absolutely impossible to regulate the tension by hand on speeders, without stretching the roving. Watch for irregular taper on your roving and holler until you have it corrected.

The worst feature about stretched roving is that it is invariably over-twisted. So, is it any wonder that you have your roll settings away out of proportion to the staple you are running?

I want to suggest that you might find it profitable in the long run if you reduced the spindle speed on your colored yarns. The fact that your spinners are working hard on around 700 spindles indicates that you have a real opportunity to improve the conditions and save a considerable amount in labor cost and waste. If the job was running right, a spinner could tend 1,000 spindles on your 20s colored yarn without any difficulty.

I honestly believe that if you can get co-operation from your carder and a correct humidity condition and close up your roll settings, your troubles will begin to disappear.

The following faults I encountered on various frames and will deal with them only in passing because you doubtless know the remedy for all of them.

Many of your roll weighting levers were not horizontal; some of them were at such an angle as to exert little or no weight on the middle and back rolls. Many of your separator blades were improperly adjusted, the traveler striking on them and causing end breakage. A very bad practice is that of your section men replacing worn rings here and there with new ones. Have a certain number of frames entirely reringed and use the removed rings—select those in best condition—for replacements until all of your rings are methodically changed. Don't allow your section men to turn over your double flanged rings haphazardly.

You have a lot of slack bands on your band-driven frames. Have someone check them systematically and pull away all the loose ones. Your bands are not of uniform diameter, having a varying number of strands. Make experiments until you have determined which is the best band for your frame, taking into consideration the condition of the whorls. Use good stock and roving for your bands. I have found that bands weighing 110 to the pound are best.

Your front and middle steel rolls are nicked. Don't allow a spinner to use a steel hook, and don't allow anyone but the section men to cut off roving roll-laps. You will continue to have roving roll-laps on your middle rolls until all present nicks are smoothed. If you insist that the section men remove laps from the roll it will not be long before they recognize the wisdom of keeping the rolls smooth in order to save themselves work. A good way to restore rolls to smoothness is to use a fine emery cloth between the flutes and finish off with pumice stone. In very badly damaged flutes, a fine file carefully handled might restore the roll. Never attempt to spin yarn with rolls out of true at the neck. Set one day a week when back and middle top rolls should be oiled on all the frames that are running and be very strict about it, as that is where a lot of your uneven yarn comes from: dry top rolls.

I believe you should try to convince your superiors of the waste and extra expense involved in allowing spinners to strip the remaining roving on creeled bobbins with a knife. Check up on how many extra sides you can run per spinner by having the management purchase a bobbin stripping machine. Point out to them also the number of hand injuries to spinners, also ruined bobbins. I would not allow a spinner to bring a knife into the mill.

On your colored work your rings are scummed and are causing a lot of ends down especially when you change from one count to another. Soak all your ring-rails—rings and all—in a very hot bath of a strong solution of soda-ash or potash for 15 or 20 minutes. Rinse them in hot water and they won't rust. Finish the job by polishing the ring lightly with metal polish.

Your frames are badly in need of scouring, and your spinners are not cleaning the smooth spaces on the steel rolls frequently enough. Scour your frames once a year and level them up both ways. A good leveling-up job is bound to be reflected in savings at the coal pile.

Your sweepers are swinging their brooms too hard and causing fly waste to get into the yarn on the opposite alley. Too much waste is allowed to accumulate on the floor under the frames. The floor under the frame should be swept as often as the alleys if you want to avoid fly waste getting into your yarn.

Watch your waste very carefully and see that the more valuable grades are not mixed and disposed of as low grade.

I would recommend that you convert your warp frames on filling wind. The saving you will make by higher speeds in spooling will more than offset the expense. I think you can avoid mistakes in putting on wrong gears when changing over if you would have large tickets hanging on each frame which would indicate the number of teeth in all the change gears, also the mark on the roving used and the mark on the yarn and the twist multiplier and number of yarn.

In closing, I would recommend that you put your doffers on a piece-work basis. I noticed that your doffers had a lot of time on their hands and it is not fair either to them or to the firm to keep them in the mill idle. If you put your doffers on piece work you may reasonably expect a reduction of around 15 per cent in your doffing cost and you will be able to boost the wages of your necessary doffers. A big advantage is that your doffers will take a real interest in seeing that the frames are not needlessly stopped, particularly on account of waiting to be doffed. Another advantage is that in inaugurating the new system of wage payment a routine of traveler changing can be put into effect. This routine can be figured on changing travelers on so many sides per day per doffer and the schedule maintained rigidly. This regular changing of travelers is of direct material benefit to the doffers themselves inasmuch as it reduces considerably the number of ends down at the start of the doff.

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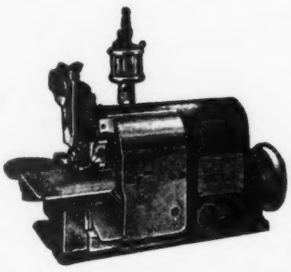

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Again, we have reports on what Type K can do for two other mills:

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Make a study of each and every job in your department and see if you can't re-arrange the duties of the help in such a manner that you will secure a cleaner looking room and better running and improved quality. Do not overload your section men. Take them into your confidence and impress upon them the problems of the management and the importance of everyone co-operating to produce a good yarn just as cheaply as other mills. If you can imbue your second-hand and section men with the right spirit toward the firm, it will be a great help toward your success. Don't try to do everything at once. Just take everything in your stride, one thing at a time and it won't be long before you have a snap and a reputation as a "crackerjack".

A. O. (CONN.)

Suggestions for Settings for Sliver and and Ribbon Lap

And quite a bit of other information of interest in connection with combers . . . . . .

EDITOR COTTON:

The questions on combing from "CONTRIBUTOR NO. 6393", published on page 84 of your July issue, cover quite a territory. He states that he is running 1⅛-inch and 1 3/16-inch cotton, with a card sliver of 44 grains per yard, and wants to know the best weights per yard and settings for the sliver and ribbon lappers, to make a smooth, strong, 56-grain comber sliver with 15 per cent noils taken out. He has 8-head five draw-box roll Whitin machine, and desires all of the settings.

Giving a comber man advice about comber settings is just about like telling another man's wife how she should bring up her children. This discussion is not given for the purpose of belittling any comber man's ideas of combing, or to serve as a check-up on any man's work. All the information given has been used and found to work out satisfactorily, and if followed carefully will produce good results.

The first thing necessary in operating combers, is to find a man with brains and the willingness and power to think. Then if you will start him off with the given settings he will adapt your combers to your problems and give you results. When he gives you results, don't try to shove someone else's settings onto him just because they say they are good. I have never yet met two comber men who weren't cousins or something, or who could talk combers for ten minutes without getting into an argument. However, this is not starting up these combers.

The first requisite of good combing is a good lap, so we will start with the sliver lapper. Spring bottom cans should be used on the cards, as a sliver as light as 44 grains can easily be stretched in dragging from low down in the cans. Cans should not all be put in at once, but half on each side so as to stagger the piecings. The stop motion should be positive and kept in good working order. When an end breaks a good piecing must be made, and not a great long single or double. Just because there are 20 ends being doubled, is no excuse for carelessness. The sliver table presents a long polished surface and, unless it is kept well polished, can cause a drag which puts unevenness into the work. The knock-off rolls should not run hard in their slides, but should be kept clean and turn easily. The three drawing rolls on the sliver lapper should be taken out at least once a month and polished, and the flutes inspected for any roughness that would cause lumps to form. When a roll bungs up, knives should not be used by the operator to cut it off, but a brass picker should be used. There is a weight relieving motion on the sliver lapper, and this should be watched to see that it is not preventing the full weight from hanging on the roll. The large calender rolls and cheek plates must be well polished, together with the selvage plate, or else the lap will not build with a good selvage. The friction motion must be even on both sides of the lap, and the leather and pulley kept clean. Care must be taken that no foreign article gets under the weight on the friction lever and holds it up. I would recommend a draft of 1.75 which would figure $\frac{44 \times 20}{1.75} = 503$ grains per yard sliver lap. The roll settings do not have to be close on the sliver lapper as the purpose of the rolls is to act as breakers, and with a short draft prepare the fibers for later drawing. I use ½-inch over the staple on the back roll and ¼-inch to ⅜-inch on the front rolls.

Of course everything conducive to evenness must be carried out on the ribbon lapper, and all the plates must be kept polished. The knock-off levers that the lap slides over are easily neglected and can cause much trouble. These should be polished. The weight relieving motion and friction motion must be watched, the same as on the sliver lapper. The laps made on a 9¾-inch sliver lapper should not be made larger than 10 pounds and on an 11¾-inch ribbon lapper not over 14 or 15 pounds. Larger laps cause much unevenness by stretching. All four laps should not be the same size on the back, but should graduate in size so all piecings will not come together. I would recommend a draft of 3.75 which would figure $\frac{503 \times 4}{3.75} = 537$ grains per yard. The rolls should be set ⅛-inch, ¼-inch, and ⅜-inch over the staple from front to back. The leather top rolls should be varnished with the same varnish as used on the comber rolls and described later.

Re-Setting the Combers

The best method to follow in re-setting combers, is to take a comber completely down to the frame, so that every part can be examined to be sure it is not worn. All the cams and gears should be tested to be

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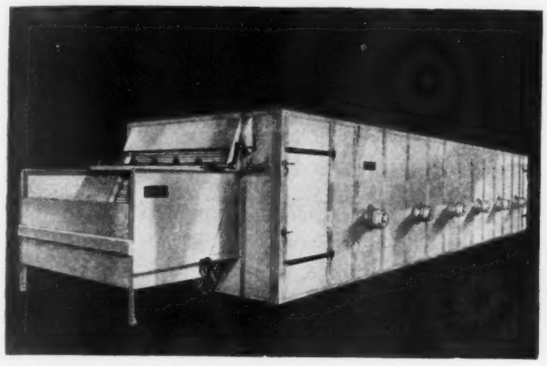

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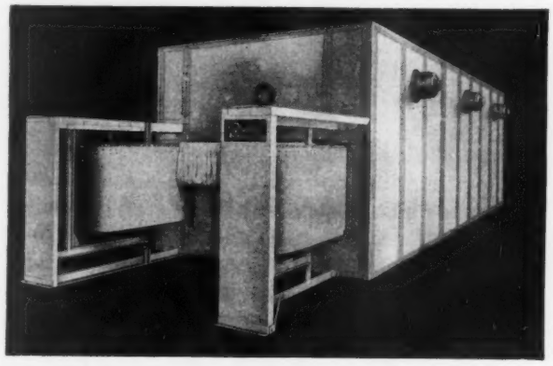

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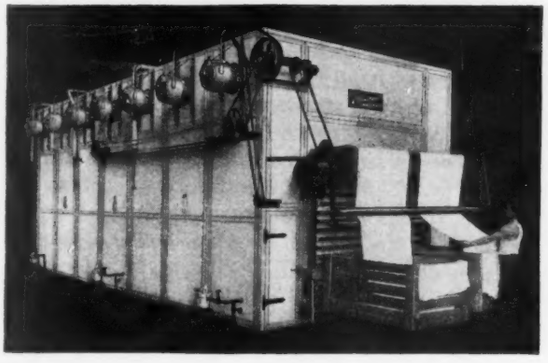

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sure they are tight on their keys as a little play on the key means a lot on the circumference. All the parts should be polished and cleaned thoroughly and then all the bearings given a little oil.

The settings given are for a Whitin Model D2 comber.

All settings are done from the detaching roll, whether directly or indirectly, so this roll is the first to be set after the detaching cams are tight. The detaching roll should set squarely in its bearings, and be tested for free turning, as each bearing cap is put on. Some fixers like to work from each end, toward the center, but I prefer to start at the head-end, and work to the foot. The reason for this is, that the first head has the longest pull on the coiler table, and therefore must be the strongest end as it gets no favoritism, and if any adjusting of the final setting has to be done, to compensate for the variation of machined parts, it is better to do this adjusting at the foot end. When the caps are all tight, and the roll turns freely, it should clear the segment by a 22 gauge.

The next thing is to line up the cylinder, and this is done by putting the index on 5, and with a 1½-inch finger gauge set each cylinder to the detaching roll. The top comb shaft is next set with a 6½-inch gauge to the detaching roll. The feed roll should be temporarily set into its bearings, and set 1-11/16-inch from the detaching roll, and then removed. It is easier to get at before the nipper cradles are placed into position. The cradles should now be taken to a vise, and held so as to be opened and closed. The bite should be set to a piece of writing paper, so it will not pull out, but will slide sideways. The cushion plate is adjustable so this bite can be made uniform. If there are any rough edges on either knife or plate, they should be smoothed up, and the jaws should close easily and with a snap that any comber man will recognize, and know his plate is properly lined up. The cradles should then be taken and placed in position in the comber, following the numbers stamped on each head. The feed roll should then be returned to its bearings and tested with the proper gauge to check the previous setting. The cradles can now be set and two points must be watched at once. With a finger gauge the cushion plate is set 1½-inch from the detaching roll and raised or lowered to a 21-gauge off the segment. This setting will give an angle of 30 degrees on the nipper knife. This should give the desired waste noil of 15 per cent. Increasing the angle of the knife will force the fibers deeper into the half lap, and increase the waste percentage. While the cradles are being set, the nipper connecting rods should be loose in their respective lever arms. The comber should now be turned to 11 on the index gear, and the nipper cams set so the ball is at the high corner of the cam, being certain that both cams are even. The nipper arms should now be leveled, by adjusting each cam lever to equalize the two, and then the connecting rods are set up so the knives are closed tight onto the cushion plate. The lock nuts are then secured to hold the setting. The comber is now turned to 15 on the index, and the nipper knife should clear the needles by a 20-gauge. If it is too tight, the cradles must be raised enough to loosen the gauge. The

WE invite our readers to make use of this department for the discussion of any and all problems arising in the mill or finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statement of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

◆ ◆

settings of the nippers are very important, and it is a good plan to turn the comber over a few times and then re-check the settings, to be sure they are all tight and correct.

The top combs can now be put into their frames and should be set to a 15-gauge from the segment at 7 on the index gear. The angle should stand at 19 degrees. Both side arms of each top comb must set squarely and firmly on the blocks, and the comb must gauge the same on both sides. The comber fixer should bear in mind that top combs are easily jarred off their settings, and the comber tenders should not be allowed to slam the combs either up or down too hard, otherwise they will change their angle and an increase in the angle will increase the waste percentage taken out, and also cause uneven work as all the heads will not size the same.

The comber must now be timed to detach at 6¼ on the index, which is done by setting each detaching cam so they will start to move the detaching roll forward at 6¼. Each cam must be timed separately, and on two consecutive nips. The plate cam, that is attached to the detaching cam, controls the pawl arm that engages with the notch wheel, and should be set so the pawl drops squarely into its notch and does not slide on the notch wheel, or else it will soon wear out both the pawl and the notch wheel. The pawl must be down at the bottom of the notch just before 6¼, when the notch wheel starts forward.

The stud holding the draft gear and star gear should now be put into its stand. The comber should be turned over by hand to test this setting, otherwise, when the pin hits the star gear it will bind and break the stand. When this stud is properly set the feed cam should be set so the feed roll will start to turn at 7 on the index. Later feeding will increase the waste.

The lap aprons should now be put in and set so the brush just touches the feed roll. These aprons will be adjusted for height later when the laps are put in, so the lap will run in evenly. The top feed rolls should then be put in and set so they will just clear the upper knife, and the springs attached to give a slight tension—even on each side.

The draw box rolls should be set, for stock 1⅛-inch to 1 3/16-inch long, 1⅜-inch, 1½-inch and 1⅝-inch from front to back. The leather top rolls in the draw box, and the leather detaching rolls, should be varnished. Either of the two formulas given are good for varnish, but No. 1 is much simpler to make and

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can be washed off. It does not last quite as well as No. 2 on the rolls:

No. 1 Roller Varnish

1 quart acetic acid (28%)
½ pound glue ground
2 tablespoons oil of Origanum
Small amount of fish glue
Thicken with dry green.

No. 2 Roller Varnish

1½ pounds fish glue
½ pound gum arabic
¼ pound powdered alum
2 quarts acetic acid (28%)
2 quarts water (cold)
2½ teaspoonfuls oil of Origanum
1 pound burnt Sienna
½ pound Red lead

Dissolve red lead in 1 quart Acetic Acid and let stand 48 hours at room temperature. Dissolve glue, gum arabic, and alum in 1 quart Acetic Acid, and 12 hours later add 2 quarts of water. Then mix the two lots together and add Origanum and burnt Sienna. This varnish must stand two weeks before using, and it is a good idea to run it back and forth from one container to another several times during this ageing period. This varnish should not be left in extreme hot temperatures, and cannot be applied to rolls on top of any other varnish.

The circular brushes should not be set deep into the half laps, as they will pack them instead of clean them. When the bristles are weak the brushes can be turned to get a little more life from them.

A comber fixer should always be on the alert to see that his section is run properly in regard to oiling, making good laps and should test his waste percentage and sizing every day, to know that conditions are correct. Good help pays on combers, as bad lap piecings or any neglect cost many dollars extra.

CONTRIBUTOR No. 6406.

"Size Once Congealed Should Not Be Re-Heated and Used"

IN A past issue of COTTON "CONTRIBUTOR No. 6333" in answering a question with reference to preparation of size mixes, made the statement that "A starch mixture that has once congealed and has to be re-heated, is an inferior size."

We received from a reader a request that this man explain what action takes place under such conditions and what effect it has on the size. We publish the answer as a matter of general interest:

"It takes but a few minutes to size a yarn which requires days and weeks to be woven. Saving in time required for weaving may be lessened considerably by the most efficient sizing. Results in the weave room production greatly depend upon carefulness in the slasher room. Excessive breakage, low production, etc., are not only costly to the management but enervating to the weaver. Trifles make perfection—it may seem but a trifle to say that the importance of freshly made size is great, but it is one of the contributing factors that permit an approach to perfection in weaving.

"A size that has been allowed to cool enough to congeal can never be made into a perfectly homogeneous mixture. It will lack the element of smoothness that makes an ideal protecting film. Uniformity of sizing can be achieved only by the use of fresh size. The older the size, the greater the lack of uniformity.

"Freshly made size, if it is well made, should be a homogeneous, smooth mixture. Once a size is permitted to cool sufficiently to congeal, this desirable condition is lost; if re-heated, it may have the appearance of smoothness but it will be so only in appearance. Actually, it will be composed of a multitude of small lumps of varying size, which evidently is not an ideal condition. Reheating starch will never completely restore its viscosity."

Upon receipt of this information, the inquirer submitted the following further question: "Does a soluble starch act in the same manner? If so, would it do so in combination with a gelatine?"

The answer received from "CONTRIBUTOR No. 6333" follows:

"I note that your correspondent wants to know if a soluble starch will act in the same manner as ordinary starch and also if it would do so in combination with a gelatine.

"The more soluble the starch is, the less objectionable it is to use it over and over again, or to allow it to cool. If the starch is really soluble, i.e., completely soluble, I see no objection to permitting it to cool and then use it in that state.

"Of course, the trouble with ordinary starch is that it gelatinizes and cannot be gotten back into a smooth and satisfactory solution. This cannot occur with a perfectly soluble starch. Gelatine, although it gelatinizes upon cooling, goes back into solution much more readily than starch, and therefore, the same objection is not applicable to gelatine as to ordinary starch."

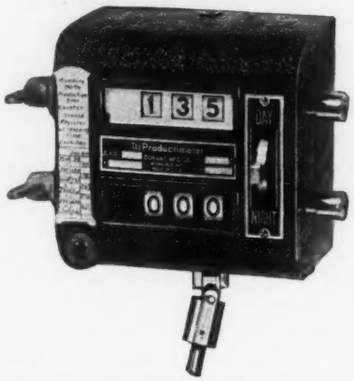
"Wash" Again Reprimands a Contributor

EDITOR COTTON:

On page 81 of the August 1935 issue of COTTON, I find an article entitled "Wants More Information About Flat Grinding". Although this is signed "D. R. (R. I.)" it has all of the ear marks of a contributor, "D. E. (R. I.)" who by plagiarism and other things forced COTTON to make an apology; see page 125 of the October 1934 issue. ("WASH'S" assumption is correct. "D. E." was changed to "D. R." through error.—THE EDITOR). This contributor has not only plagiarized, but besides is misleading the boys, and I am going to prove it beyond any reasonable doubt.

To begin with, the reader can see that there is something wrong with his think-tank for his article is proof enough that he does not know the difference between milling and grinding. The subject under question was the article "High and Low Card Flats", page 123, October 1934 COTTON. Now, when I answer any contributor, I stick to the subject, but of course, when you do not understand a subject, you are always likely to go astray, as this man has done in this case.

In the first paragraph of his article in August, he admits that the automatic flat grinding machine is a valuable asset to any card room; then in the next para-



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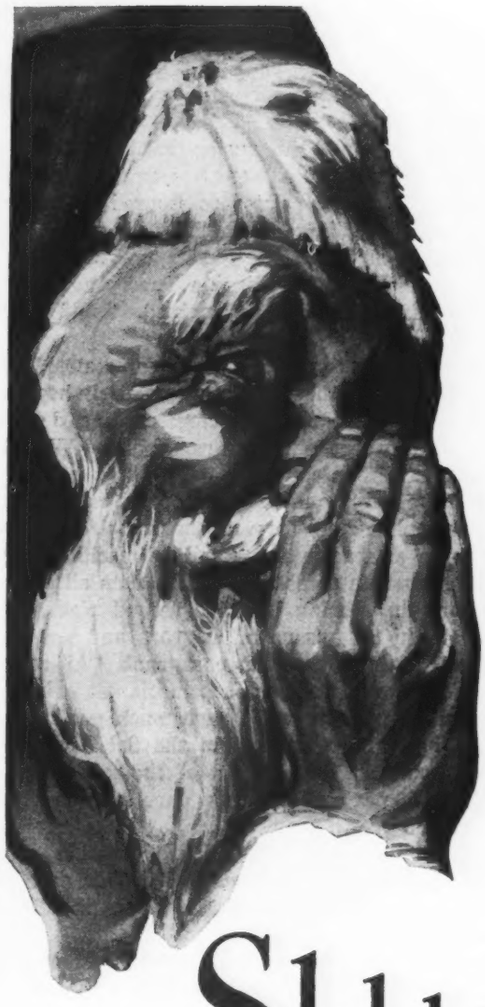

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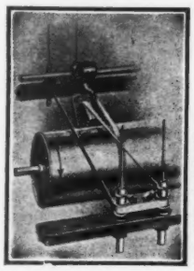

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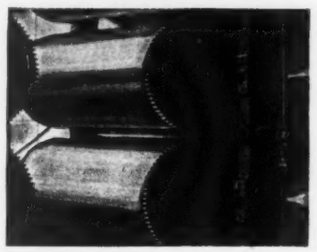

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graph he states, "Can this machine correct worn seatings? Of course not, and 'WASH' ought to know this." Now, is that not pure ignorance? If the automatic flat grinding machine will not correct worn seatings, then what will it correct?

Well, "WASH" knows this much: that the automatic flat grinding machine does correct worn seatings, for the good reason that the flats are secured in beveled seatings during grinding to match the bevels of the milled end-faces of the flats. What I am stating here can be found in "Card Grinding in Theory and Practice" by Dronsfield Brothers of England. Could I give better authority?

Again, in the first paragraph this man states, "But 'WASH' fails again by not explaining precisely how the machine would prove useful in any carding department." In other words, this man would blame "WASH" for his own lack of intelligence.

In the first place, anyone with practical carding experience would deduce from my two articles that the object of the automatic flat grinding machine is to grind the high flats so as to have the flats all of one height from the seating. In the second place, look up the October 1934 issue of COTTON, and you will find where I state in the 11th paragraph, "All cotton mills should have at least one automatic flat grinding machine which in turn would save much good fiber, produce a better web and retain the flat bevel, and every flat would do 100 per cent of the work instead of only 30 to 50 per cent as is now done in mills where cards have run over a year."

Again, let us consider his foolish question, "Can this machine correct worn seatings?" This question comes from a man who thinks he knows something about a cotton card!

Every practical man knows or should know that the seatings of a flat wear more at one end than at the other, or again, one flat end may wear faster than all of the other flats. The more the wear on the seatings, the higher the flat. So, the automatic flat grinding machine grinds the flats equal to the amount of wear on the seatings. So, it does cure the evil of worn seatings.

After reading the foregoing, the reader will agree that what this man states in the latter part of his second paragraph is not convincing.

In the third paragraph he gives us more foolishness. He claims that it may happen that we may set a card by luck or guess work. Imagine that! Setting a card by luck or guess work is a good method to be always out of a job. You need not set by luck or guess work; all you need to do is to find all of the high flats. Set the flats to 10/1000-gauge, then at noon or any other time when the mill is stopped, turn both the flats and cylinder by hand at the same time; if you do not hear any rubbing, set down a little closer and so on until you hear one or more flats rubbing, then mark all high flats by a nick with a file and always set the high flats tight to a 10/1000-gauge. This answers the fourth and fifth paragraphs of the August letter.

What he states in the sixth paragraph shows his attitude of mind, and, to put it mildly, he is surely confused. I stated in the seventh paragraph of my article which appeared in the March 1935 issue of COTTON, "You must set by the high flats. So, as far as the other flats are concerned, you are in the dark. What a picture!" Therefore, I did not claim that everything would be O. K. by setting to high flats. However, it is the only way without the use of an automatic flat grinding machine.

In his seventh paragraph in August, he states, "Is a set of flats properly set even if you could set to all high flats? The answer is decidedly, No!"

This paragraph is the only sensible one in his whole article; that is why it is so short.

In his eighth and ninth paragraphs he gives us more of the same thing that his article is full of. I want to state frankly that no man could work for me if he did not know the high flats on his cards.

This man's remarks in his tenth paragraph are really a boost for the automatic flat grinding machine, but evidently he does not know it because his mind is so centered on knocking "WASH". You have a hard job on your hands when you try to explain how elongated flat chains will change the seatings of the flats.

Now, let us read his eleventh paragraph, in which he sets out to describe an experience he had with faulty grinding motions and worn chains on 40 cards in an old mill being the cause of high and low flats. Read that paragraph, and then study the following from me:

(1) Elongated flat chains will throw the flats out of a parallel line; that is all.

(2) I have worked in cotton mills 50 years and in all that time never saw where the old flat chains were replaced with new ones on all cards.

(3) He claims that the flats were changed, owing to 2½ inches of stretch. What a statement!

The Saco-Pettee catalog states, "Realizing that in many mills much damage is being done to the flats by slack chains allowing the wire to drag on the cylinder casings, we have designed a convenient stretcher stand with movement enough to take up a lengthening of the chain equal to the width of two flats, or practically the life of the chains, without shifting the stands, or using off-set links." That was many years ago, but it still stands today.

Now, let the reader measure the distance of space occupied by two flats and he will get an idea of what a mis-statement has been made by this fellow. This proves also that he never experienced such a change as he describes, simply because the stretcher stand would easily take up the small space of 2½ inches. If he is right, what is the use of the stretcher stand?

Since my first article to COTTON over 20 years ago, I have always advocated setting all flats to a 10/1000-gauge. The setting of 5/1000-gauge was given for a test only.

This fellow claims that I pat myself on the back plenty. There must be a reason. As a rule, it is a good record. Since the year 1913 I have contributed to this and other departments in COTTON. In all of that time I have never told an untruth, never copied, and so COTTON has never had to make an apology on *my* account.

Besides, I have tried always to give the best that is in me. I have never tried to get the best of the other fellow by making misleading statements. On the other hand, this man is guilty in every instance mentioned.

WASH (R. I.)

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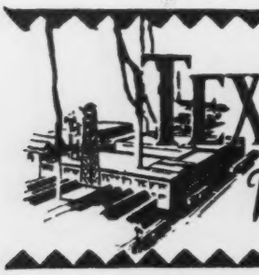

TEXTILE BOOKLETS *Worth Writing For!*

The booklets or catalogs briefly mentioned below may be obtained by any readers of COTTON who will write to the Company issuing them or to COTTON, Grant Bldg., Atlanta, Ga.

11. Whitinsville Rings—16 page illustrated booklet, describing ring manufacture, measurements, types, uses. How to determine flange sizes. By Whitinsville Spinning Ring Co., Whitinsville, Mass.

23. Practice of Rayon Sizing in American Mills, Raygomm, Lakeo Gum—Three booklets on products for sizing and finishing rayon and other textiles, presented by Stein, Hall & Co., Inc., 285 Madison Ave., New York, N. Y.

25. "Lupogum" and "Monopole Oil"—Two booklets on textile sizing and finishing products. Jacques Wolf & Company, Passaic, N. J.

28. Akron Belting—Practical rules and general information for users of belting with belting catalog. By Akron Belting Co., Akron, Ohio.

29. Continuous Card Stripper—A 20 page booklet describing in detail continuous card strippers, their advantages, the power required to operate, etc. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

30. Lubrication of Textile Machinery—32 pages, illustrated. Data covering the economical lubrication of all textile machines. New York & New Jersey Lubricant Co., 292 Madison Ave., New York, N. Y.

38. Sleaziness in Full Fashioned Knitting—Illustrated survey with samples of fabric showing causes of sleaziness and methods to be employed in eliminating it.—By Textile Machine Works, Reading, Pa. (This company also issues parts catalog for Reading full fashioned machines with general information on subject of full fashioned knitting.)

64. Efficiency and Performance of SKF Roller Bearing Spindles—A twelve page booklet showing the advantages in power consumption, increased production, savings in lubrication, increased yarn breakage strength to be secured through roller bearing spindles. SKF Industries, Inc., Front St. and Erie Ave., Philadelphia, Pa.

65. Why Cooper Hewitt Light is Better Than Daylight—A 16 page booklet explaining in detail the importance of good lighting and the necessity of proper quality as well as proper quantity of light. General Elec. Vapor Lamp Co., Hoboken, N. J.

66. Dronsfield's Patent Portable Auto-Feed Needle Point Grinder No. 176—describing a new departure in card grinding—John Hetherington & Sons, Inc., 250 Devonshire St., Boston, Mass.

69. Monel Metal Equipment for the Textile Industry—A 50 page buyers' guide and catalog with more than 100 illustrations of various items of monel metal dyehouse equipment. International Nickel Company, Inc., 67 Wall St., New York, N. Y.

72. The Merrow Butted Seam—A 16-page booklet defining and illustrating the Butted seam, describing its properties and outlining some of the advantages to be gained by its use in textile fabrics. The Merrow Machine Co., Hartford, Conn.

—83. Dayton Cog Belt Catalog—A 32 page booklet full of vital information on power drives, plainly and simply assembled and arranged so that anyone can select the proper standard drive for any condition. It also provides data for the calculation of drives where acquired. The Dayton Rubber Mfg. Co., Dept. C-11, Dayton, Ohio.

92. Silicates of Soda—A review of the properties of silicates of soda and their various uses. Philadelphia Quartz Co., 121 S. Third St., Philadelphia, Pa.

95. Onyx Processing and Finishing Compound Catalog—A thirty-two page booklet listing and describing entire line of processing and finishing compounds, covering every process on all types of fabric. Onyx Oil & Chemical Co., 15 Exchange Place, Jersey City, N. J.

104. Warp Sizing. National Oil Products Co., Harrison, N. J.

105. Mildew Prevention. National Oil Products Co., Harrison, N. J.

106. Cotton System Warp Sizing on Multiple Cylinder Machines—a folder showing the advantages of this type of machine in making warps of acetate and other synthetic yarns and spun silk.—Charles B. Johnson, Paterson, N. J.

107. Complete Information on Alemite Lubrication. Showing how costs can be reduced through proper lubrication. Alemite Corp., 1823 Diversey Blvd., Chicago, Ill.

110. 3-In-One Oil for Industrial Uses—showing the many industrial uses and advantages of this oil. Three-In-One Oil Co., 70 Varick St., New York, N. Y.

115. How to Cut Cloth Room Costs with Automatic Picking Machines and Improved Inspecting Machines—Hermas Machine Company, Warburton Ave., Hawthorne, N. J.

116. Arey—Telling in an interesting way the story of Arey, which completely liquefies ordinary thick boiling pearl starch, and its many advantages. Drake Corporation, Norfolk, Va.

117. Anti-Friction Bearings as Applied to Spinning, Drawing and Twisting Frames—This bulletin shows with detailed drawings how a simplified design of roller bearing applications is made to replace the plain babbitt bearings and lists the advantages that are gained. It deals primarily with better continuous production and in consequence freedom from equipment care and repairs. Hyatt Roller Bearing Co., P. O. Box 476, Newark, N. J.

119. The World's Finest Sewing Machines—a condensed catalog giving details of the various Willcox & Gibbs sewing machines. Willcox & Gibbs Sewing Machine Co., 658 Broadway, New York, N. Y.

120. Goodyear Mechanical Rubber Goods Catalog—40 page catalog giving practical information and tables helpful in the selection of the proper belting, hose or packing to suit the requirements of the mill. Goodyear Tire & Rubber Co., Akron, Ohio.

122. Water Filters and Filtration Equipment—Containing complete description of the chemical processes involved in the coagulation and precipitation of foreign matter, the removal of iron oil, manganese, from water and the production of clean water suitable for the textile industry, together with tables of specifications for standard filters, and information showing the extra profits to be made by the mill through reduction in costs and process difficulties, through removal of undesirable impurities in water. Permutit Company, 330 W. 42nd Street, New York, N. Y.

124. New Condensed Catalog on Ball Bearings and Power Transmission Units—Combines all of the information and the industrial uses of radial ball bearings as well as the Fafnir power transmission line of wide inner ring and ball bearings. It gives complete information, interchangeability tables, dimensions, prices, etc. Fafnir Bearing Company, New Britain, Conn.

130. Three New Textile Scouring Agents—This 32-page book gives many valuable formulas for the use of Houghton's Wonder Powder—a new type of colloidal detergent—in fulling, scouring and finishing nearly all types of woven and knit goods. Also contains several pages of valuable reference and conversion tables. E. F. Houghton & Co., 240 W. Somerset St., Philadelphia, Pa.

135. The Pick Method of Weaver Wage Payment—A manual of practical information describing methods to be followed in using Pick Counters; suggested forms, and tables included. Durant Manufacturing Co., 1932 No. Buffum St., Milwaukee, Wis.

139. Textile Detergents—Theory of the use of alkalis and control of pH.—This 32 page booklet explains in simplified manner for the benefit of the layman the chemical processes that take place in using textile detergents in the finishing of textile goods. It contains many useful tables and data. Detergent Products Corp., Peachtree Bldg., Atlanta, Ga.

140. Textile Machinery—Improvements in Design and Methods of Lubrication. A discussion of the problem of lubrication of textile equipment covering operating conditions and factors affecting and affected by lubrication. Card Room Operations, Twisting and Spinning Machines, Silk Throwing, Looms, Knitting Machines, etc., covered. Available in copy of June 1934 issue of "Lubrication." The Texas Company, 135 E. 42nd St., New York City.

141. V-Belt Engineering Data Book—Over 50 pages of pertinent engineering information including data on selecting a V-Belt drive design of special V-Belt drives, numerous standard tables, charts and belt and sheave list prices. Manhattan Rubber Manufacturing Div. of Raybestos-Manhattan, Inc., Passaic, N. J.

147. Let's "CAN" The Oil Can—describing permanently sealed bearings for life, and for higher speeds and temperatures single seal ball bearings which have to be lubricated only from one to three years. New Departure Mfg. Co., Bristol, Conn.

148. Leather Packing—.28 page booklet giving timely hints on the proper selection and installation of leather packings, the various types available, sizes and prices. Alexander Brothers, Inc., 406 N. Third St., Philadelphia, Pa.

150. Engineering Data Book on Mechanical Rubber Goods—21 pages of useful information and engineering data, designed to simplify the selection of belting, hose and other mechanical rubber goods for industrial service, including a review of belting requisites for a wide variety of uses as well as helpful tips on installation procedure. B. F. Goodrich Co., Mechanical Division, Akron, Ohio.

152—Plant Checkup List—Crane Co., 836 South Michigan Ave., Chicago, Ill.

153—Descriptive Folder of the New Low Cost Hermas Shear—Hermas Machine Co., Warburton Ave., Hawthorne, N. J.

154—Johnson Bronze Bulletin No. 340—showing over 600 sizes Johnson general purpose bronze bushings. Johnson Bronze Co., New Castle, Pa.

156. Link-Belt Engineering Data Book No. 125—showing features and giving engineering data on Link-Belt silent chain drives. Link-Belt Co., 910 South Michigan Ave., Chicago, Ill.

157. Grading Rules and Complete Specifications for Laying and Finishing Maple Floors—Maple Flooring Manufacturers Association, 1794 McCormick Bldg., Chicago, Ill.

159. Corrugated Boxes and How to Use Them—a reference book for use in the selection and packing of corrugated fibre shipping boxes. Hinde & Dauch, Paper Co., 454 Decatur St., Sandusky, Ohio.

161. Fence—How to Choose It—How to Use It—book explains in detail how to chose a fence, determine values and prevent costly mistakes. Cyclone Fence Co., Dept. 4211, Waukegan, Ill.

164. Johnson Rotary Pressure Joints—Bulletin describing this rotary pressure joint which requires no packing, no lubrication and no adjustment, giving installation and maintenance instructions, types, sizes, dimensions and prices. The Johnson Corp., Three Rivers, Mich.

166. Better Cones The World Over—Bulletin describing the Universal No. 50 Winder for silk and rayon. Universal Winding Company, 95 South Street, Boston, Massachusetts.

168. The Tube-Tex for Tubular Knit Goods—Bulletin describing this modern machine which extracts, processes, dries, conditions and folds in one continuous operation, lowering costs, saving labor, power, space and waste. H. W. Butterworth & Sons Co., York and Cedar Sts., Philadelphia, Pa.

170. Gates Textile Accessories—showing the increased efficiency and economy to be secured through the use of Gates cone belts, evener belts, card bands and loom binder cushions. The Gates Rubber Company, Denver, Colorado.

173. Over the Rough Spots—28 page booklet describing Stonhard resurfacer for repairing and resurfacing concrete, wood, brick and compostition floor, making permanent repairs to badly work surfaces. Stonhard Company, 401 North Broad St., Philadelphia, Pa.

174. Robertson Chain Link Fencing—giving details and specifications of Robertson chain link fencing, providing efficient and low cost protection for mill property. W. F. Robertson Steel & Iron Co., Elm & Second Sts., Cincinnati, Ohio.

176 Sonoco Products—A 60 page illustrated booklet giving descriptions, specifications and charts of the many Sonoco products, including: bobbins, cones, tubes, cork cots, roving cans, spools, rolls, etc. Sonoco Products Co., Hartsville, S. C.

177. New Advances in Loom Equipment—12-page booklet describing discoveries and advances which loom manufacturers have made in keeping pace with these discoveries down to the present time—non-technical, informative, amply illustrated. Emmons Loom Harness Co., Lawrence, Mass.

179. Improved Airplane Propeller Exhaust Fans and Ventilating Equipment—a 40-page catalog showing the important factors to be considered in a propeller type fan to secure the greatest efficiency, with data and tables showing fan capacity and details of each type and size of fan and views of typical installations. Propellair, Inc., Springfield, Ohio.

180. These Extra Cushion Cork Cots Offer Six New Advantages—a 6-page folder which tells the story of the new Armstrong's Extra Cushion Seamless Cork Cot from the viewpoint of the mill man. The folder describes HOW the new cot is of advantage to mills spinning cotton yarn; WHY it is better, and something about its method of manufacture, and also gives PROOF in the form of some tests that have been made with this new roll covering material. Armstrong Cork Products Co., Textile Division, 930 Arch St., Lancaster, Pa.

181. Eagle Penetration Roll—Illustrated pamphlet showing the advantages of the new Eagle Penetration Roll, made to fit in any type or model slasher size box, with complete description and suggestions for installation. Eagle Iron Works, Greenville, S. C.

182. M. & M. Hooks and Levers—Illustrated pamphlet descriptive of the M. & M. Hook and Lever, the latest improvement in weight levers. Illustrations show the construction of the lever and the importance of proper weighting of the top roll is stressed. M. & M. Textile Lever Co., P. O. Box 1552, Greenville, S. C.

183. Schieren-izing—describing leather belt manufacture from the selection of hides through the various processes to the final tests, also showing illustrations of belts with unusually long service lives. Chas. A. Schieren Co., 31 Ferry St., New York, N. Y.

184. Speed Control Handbook T-35—new reference book on variable speed control, said to be the most complete and helpful book on this subject ever published, 112 pages and more than 200 illustrations of interest to every production executive, purchasing agent, superintendent, overseer and master mechanic. Reeves Pulley Co., Columbus, Indiana.

185. Dulux—The White Finish that Stays White—New book describing the new ten-point finish for factory walls and ceilings, the finish that stays whiter, stays cleaner and stands repeated washings. E. I. duPont de Nemours & Co., Finishes Division, Wilmington, Del.

186. F-7 Feeder Bulletin—Describing the better blending that is secured and the important cleaning operation that is added by using F-7 feeders in place of bale breakers. Saco-Lowell Shops, 147 Milk St., Boston, Mass.

187. The Wildman Single Head Full-Fashioned Hosiery Machine—Literature on request from the Wildman Mfg. Co., Full Fashioned Division, Norristown, Pa.

188. Form 374—This form enables you to gather your own cost data on your sewing machines and determine whether new Union Special Machines will show big savings. Furnished free by Union Special Machine Co., 400 No. Franklin St., Chicago, Ill.

189. Walker Steel Products—Eight page illustrated catalog descriptive of the Walker method of quickly, checking the efficiency of machinery. The improved one-unit switch case and pedestal for above or below floor installation, is discussed in a practical manner. Walker Electrical Co., 526 Means St., N.W., Atlanta, Ga.

190. Warp Conditioning Units for Synthetic Yarn Slasher—booklet giving full details will be sent free to mill men who write on their company letterhead. Chas. B. Johnson Co., Paterson, N. J.

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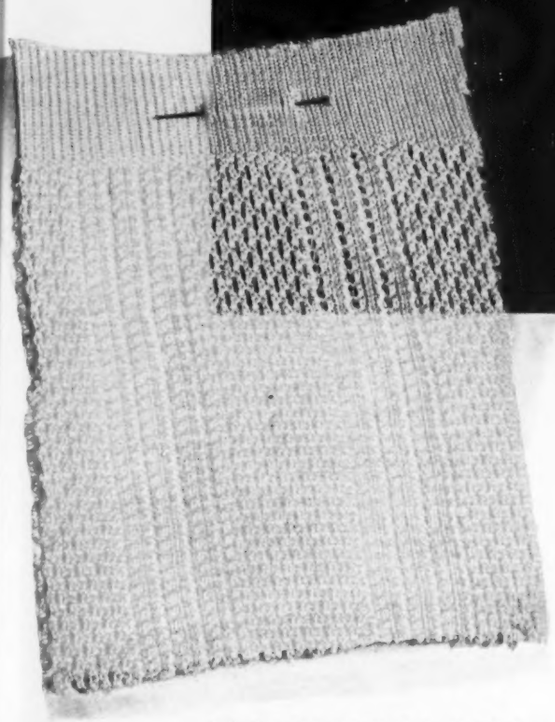

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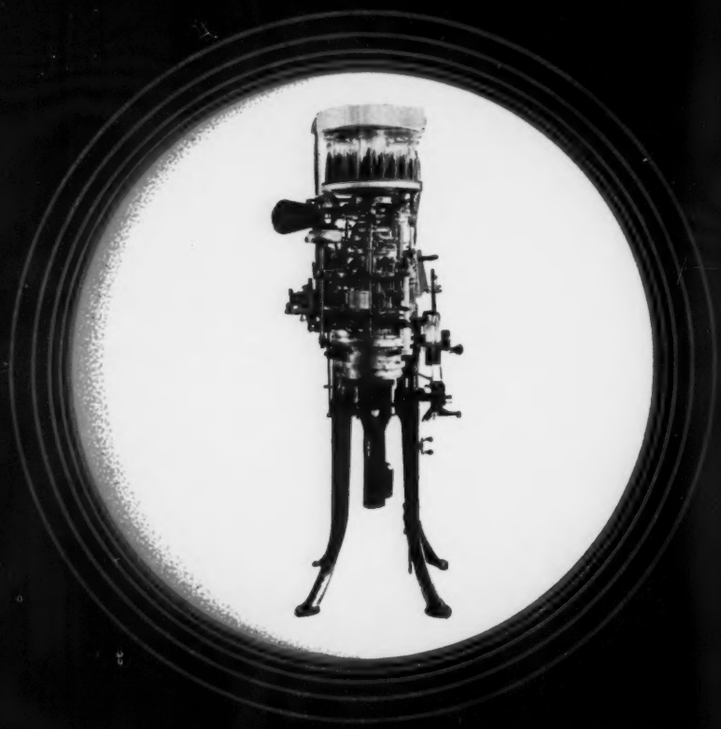

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KNITTING SECTION

SILK THROWING for Full-Fashioned Hosiery

By Henry W. Hoffmann

(Part Two—Continued from December Issue)

Silk Spinning and Twisting

AFTER the silk has been wound from the skein to the bobbins the silk is then twisted; usually on what are called 5-B or similar spinning machines. These are the machines in a throwing plant that twist the number of threads together. In other words, when a knitter orders 4 thread silk, the 4 threads are twisted together on the spinning machines as follows:

Four bobbins of single end silk as received from the winding department are placed on four pegs or one bobbin on each peg. The four ends of silk then pass through a set of rollers and four ends of silk are then wound onto another bobbin. These machines also do the twisting of silk in the same operation, but the highest number of turns per inch that can be twisted on these machines is five turns. So when making high twist silks, the silk is first placed on the spinners and twisted from two to five turns and then the additional turns needed for high twist silk is done on another type of spinner.

The spinning operation is where the knitter will make many "seconds" in hosiery if this operation is done by a careless operator in a throwing plant. Many times the knitter will see a ring in the hosiery and believes that this ring is due to uneven denier. However, this is not always the fault of uneven denier in silk but is due to the operator of spinning machines not doing the work as it should be done.

When a single end breaks down on a spinner spindle, the spindle automatically stops. However, for several yards on the bobbin containing we will say four ends of silk, the end that was broken did not enter into the bobbin and the result is that for several yards, only three ends of silk are on the bobbin instead of four ends of silk. An operator is taught that when a thread breaks the operator must pull off silk on the bobbin until four strands of silk show on the bobbin before the end is re-tied.

If they do not pull off the silk and count the ends before tying it, it means that only three ends of silk are on the bobbin instead of four ends for several yards and when this silk is knitted a thin place or ring will be produced in the stocking causing it to become a second.

When a knitter sees a so-called ring in the stocking and wishes to determine whether it is uneven denier in the silk or the fault of spinning, all that is necessary to do is to see if a knot has been tied at the point where the uneven denier has stopped. If there is a knot then the operator of the spinner was careless and if there are many of these places in any one lot, the throwster should be notified so that he can check up the operator.

After the spinning operation the bobbins are placed on a high twist spinner to spin the silk into high twists, such as is required by the hosiery trade today. This operation is as follows:

The bobbins of silk that are taken from the spinners and have been twisted from two to five turns per inch are placed on the high twist spinners and the silk is transferred from the bobbins to what are called spinner bobbins. The twisting operation is done by a belt driving a spindle at a very high speed. This is the operation that causes what knitters call hard twisted spots in the silk and usually these small stretches of hard twisted silk result in the hosiery being thrown out as "seconds". This uneven twisting or hard twist is caused mainly by belt slippage and every good throwster insists that his mechanic watch belt slippage to prevent this uneven twisting.

Steaming—Setting the Twist

The next operation in a throwing plant after the twisting operation has been completed is the steaming operation or in other words setting the twist by steam to prevent the kinking of the thread on the knitting machine. For this operation each throwster has his own pet ideas how steaming should be done and what kind of steam box to use.

Most of the steam boxes used are built by the throwsters themselves, although in recent years the throwsters have purchased boxes from manufacturers who have made a study of the proper steaming of silk. In the steaming of high twist silk, the throwster must be accurate in the steaming process, as to the amount of time it takes to set the twist and also must watch the temperature of the steam box because time and temperature control are very necessary in the process of setting twists in silk.

A silk coning department (Courtesy, R. K. Laros Silk Co.)

Silk should never leave a throwing plant until the person in charge of steaming the silk is sure that the twist is set properly and that the knitter will have no trouble with kinking during the knitting operation. If silk does kink for the knitter then the throwster certainly is to blame for this condition.

The Coning Operation

The last and most important operation in the throwing of silk is the coning operation. I say important because most of the knitting troubles of thrown silk are caused by poor cone winding. Most knitters are familiar with the principle of coning silk because up to several years ago all silk used in a knitting mill was backwound over an emulsion roll to moisten the silk so that it would knit properly.

When the knitting mills backwound the silk, the throwster was rarely blamed for poor cone winding and most of the bad winding was blamed on the operator doing the coning at a knitting mill. Since hosiery manufacturers generally have done away with coning at their mills, and adopted the method of conditioning through humidification, the throwster must now be on his toes at all times in the coning department to see that the knitter receives good coning.

Many improvements have been made in recent years on slub catchers for coning machines and every throwster is doing his utmost to employ good intelligent operators for this operation.

Slubs, split ends, waste and ends untied or loose on the cones are what cause press-offs on a knitting machine and as press-offs mean waste, which cut down the profits in a hosiery mill, one can readily understand how important it is for the throwster to see that good coning is done at his plant.

In the coning operation, the throwster must first see that cones are all wound even in tension. Cones must not be wound too hard or too soft. All porcelain attachments and wires that the silk threads run over must be examined and tested frequently to see if they are cut or nicked to prevent split ends in the silk.

All slub catchers must be tested regularly with a gauge to be sure that all waste, dirt and slubs are caught by the slub catcher and not allowed to enter into the cone.

In a knitting mill a knitter sometimes complains about press-offs being caused by the thread running off the cone and will say that the coning operator is not tying the ends or that the knots are not tied right and the knot has slipped causing these press-offs.

Let me say that while this complaint is justified at times, as far as the poor workmanship of the operator is concerned the ends running off of a cone is mostly due to a mechanical defect and most throwsters today know what causes this trouble. So if a knitter complains about this, the throwster should be notified and if the throwster does not know what causes this trouble he can readily find out what to do from other throwsters who know how to rectify this trouble.

In the wrapping of cones many throwsters are using a rubber band around the outside of the cone. The purpose of using this band is to prevent the outside layers of silk from becoming loose or ruffled, as looseness or ruffled layers make it necessary for the knitter to take off several layers of silk before he can place the cone on the machine. The amount of silk taken off because of ruffled cones must be put into waste.

Therefore, the idea of using rubber bands around the cones has helped the hosiery manufacturer to save waste but the mistake that some throwsters are making is that they use too small a band and the result is that the rubber band digs into the cone and many times causes press-offs for the knitter.

Knitters having this trouble should notify the throwsters. The remedy is to use a longer and wider band that will not dig into the edges of the cone.

I am sure that my readers will agree with me that every individual having charge of the silk and knitting operations of a hosiery mill should if possible have at least a good idea of the throwing of silk and this knowledge will always be helpful in producing good hosiery. I have tried to outline the most important things that a knitter should know about throwing silk for full-fashioned hosiery and I can only say in closing that I urge all hosiery supervisors and knitters to work in harmony with the throwster at all times. Call his attention to the silk problems you have and by this close co-operation, better silk will be secured for knitting which will result in better hosiery, less seconds and waste.

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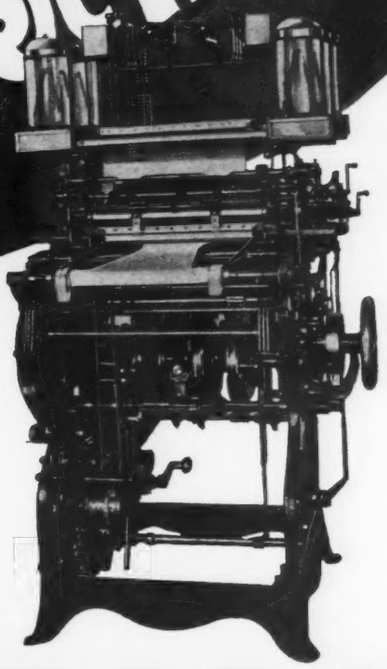

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RIBBERS---Article 2

Notes on Their Operation and Adjustment

(EDITOR'S NOTE—*This is the second of a series of articles discussing the operation and adjustment of the parts of rib machines. The first article in the series appeared on page 102 of the November issue.)*

Dial Cap Assembly (Continued)

EDITOR COTTON:

The Yarn Carrier

Several types of yarn carriers are used on rib machines of today, depending entirely on whether the machines are plain or equipped with striping attachments which require the use of yarn changing fingers. Yarn carriers on plain machines usually have two yarn feed holes which make it possible to produce both plain cotton or rayon plaited tops. Constant use, with miles of yarn running through the feed holes with a reasonable amount of tension on the yarn, causes the holes to become cut, and small nicks or gaps appear, and when they once get started, they get worse, fast resulting in press-offs, waste and various kinds of trouble.

Rayon or pure silk yarns are harder on the yarn carriers than mercerized or combed singles. Regardless of what *kind* of yarns are used, it is necessary to go over the carriers regularly and polish the feed holes, making sure to round out the inner and outer edges of the holes so the yarns will pass freely. A small amount of emery cord, plus a little energy, will remove nicks and gaps in a hurry. Emery cord is cheap, waste is expensive, and energy—well, every rib fixer has it, but many do not use it.

Yarn carriers are also subject to wear on the inner side and the under side. Carelessness in adjusting the yarn carriers will ruin them faster than ordinary everyday use. Yarn carriers must of course be set in close to the cylinder needles; we all know that, but when we remove the carrier and find a deep trench cut into its inner surface we know that the carrier was set too close, causing unnecessary wear on the cylinder needle hooks and ruining the useful life of the carrier.

Setting yarn carriers too low will also cause unnecessary wear on the underside of the carrier and damage the dial needles when the carrier becomes rough. One other important thing to keep in mind when making yarn carrier adjustments is to be sure that the latches of the cylinder needles do not strike the rear end of the carrier when they close. Remember that the latches of the cylinder needles close earlier when the loose course is being made; set the carrier so the latches of the cylinder needles will not strike it at this point. Very often the machine fixer will set a carrier, turn the machine by hand and note the cylinder needle latches closing immediately behind the carrier. He is sure the latches will not strike the back end of the carrier. But, remember he was turning the machine slowly by hand; what will happen when the machine is run by power: will the latches still clear the carrier? Once again, the fixer must depend more on his power of judgment and imagination and less on what he actually sees.

Keeping a yarn carrier set properly on a single feed plain ribber is of course not difficult, but keeping them set on large body machines which have 8, 10, 12 or more feeds—well, that's another story.

Recently we had occasion to work on a certain fine gauge ribber which for some reason or other was continually bending the latches of the cylinder needles; you know the kind I mean, the kind that would make a fellow cuss in every known language. Right in the middle of some 1936 model streamlined cussing, our friend the boss came along. "What's wrong, boys; why are you giving this machine down the country?" "Oh, this good-for-nothing so-and-so has been bending latches off and on for several days and we can't see how come." "Have you polished the carrier?" "Yes, sir, twice." "Well, take it off and let's have a look." So we handed him the carrier and he looked at it carefully. We knew it was O. K. and were about to say so when suddenly he dug into his vest pocket and brought out a small but powerful magnifying glass. He took a good look at the carrier through his glass, and smiled and invited us to do the same. "Well, how about it, boys, what are you going to do now?" We agreed there was but one thing to do: scrap the car-

The consumer . . the retailer . . the hosiery manufacturer . . the needle manufacturer—all stand to gain when the needles produce a clearer, sheerer fabric at a lower cost. That we are America's largest producers of Spring-Beard Needles and that nearly all manufacturers of fine quality silk stockings are standardized on Royersford Needles is a tribute to profitable performance.

The prescription for better knitting

ROYERSFORD NEEDLE WORKS, INC., ROYERSFORD, PENNSYLVANIA

Southern Office: Provident Bldg., Chattanooga, Tenn • Louis Hirsch Textile Machines, Inc., Special Representatives

ROYERSFORD NEEDLES

rier and get a new one. We were sure the carrier was O. K., but the boss' little glass soon convinced us that we were wrong. Under the magnifying glass it looked like a wash-board and in addition it was cracked, causing the needle latches to take plenty of punishment.

The Latch Opener

Latch openers and ribbers go together just like ham, gravy and grits. It matters little what kind of a ribber it happens to be, a great deal depends on the condition of the latch opener and its adjustment in relation to the needle hooks and latches. There are two types of latch openers on rib machines of today. One has a long tapered point, the taper beginning at the bend in the shank and continuing to a fine needle point. The other is not tapered, being of the same diameter from the bend in the shank to the point where it tapers off somewhat bluntly to a sharp point. The tapered needle point latch opener is preferable for fine gauge machines, the blunt point for coarser gauge.

The latch openers of course are subject to wear, and since they can cause a great deal of trouble when they become worn, it is very important to see that they are kept in first-class condition. The most common trouble with latch openers is that they become rough, points are bent or broken off entirely. Very often, machines continue to run with a bad latch opener until the needles all but cry out to the fixer: Please, Mister, do something; the latch opener is ruining us.

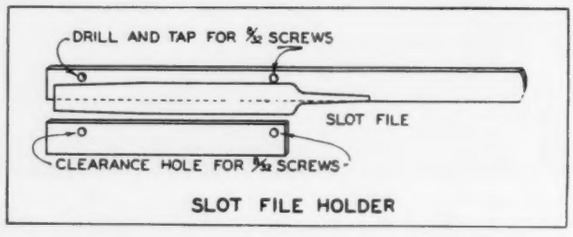
Next on the latch opener trouble list comes poor or careless adjustment. I do not mean that the rib fixer will intentionally set a latch opener wrong, but I do mean and know from every day experience that he often guesses and when he makes a bad guess, well, you know what happens. There are other forms of carelessness with latch openers, not willful carelessness, mind you, but carelessness nevertheless. Here is a good example, a common everyday occurrence in the life of a rib machine fixer: We find friend fixer standing in front of a machine looking rather glum. "What's wrong, buddy?" you ask. "What's wrong? Man, look at this jam-up. I'll say it's a mess." "What caused it?" "Darned if I know." So he proceeds to remove many bent and broken needles, replaces two badly damaged needle bands and after several hours of steady work he has the machine ready to run once more. He starts it cautiously and before it has made a dozen revolutions, more needles are broken. Suddenly he remembers this particular machine had given some trouble earlier in the day. He had found it was caused by a bad point on the latch opener, so he replaced it, and being in a hurry (because he was having a bad day) he failed to set the new latch opener just right and the result of this bit of unintentional carelessness was more work and more trouble.

Now, there is no particular trick in setting a latch opener properly, but it must be set right to get results. Many fixers set latch openers entirely by placing the point in the needle hook with the latches down, and trust in past experience and Lady Luck that the adjustment is correct. The all-important thing in setting a latch opener is to see that the action of the latches against it when being opened is right. Remember, the latch opener must cam the latches outward and downward. If the shank of the latch opener is too near the needles, the latches will open only partly. If on the other hand the shank of the latch opener is too far from the needles, the camming action on the latches will be too abrupt, causing the latches to bend. Speed has a great deal to do with the adjustment. A safe way to set a latch opener is to do it with the latches closed. The point of the latch opener should not be too high up in the needle hooks, A latch opener will give good results if the point is set centrally in the needle hook and high enough to be level or on a horizontal plane with the spoon of a closed latch. A good practice in connection with latch openers is to check their adjustment after a jam-up. Very often a load-up or other mechanical failure will disturb the latch opener adjustment. If it is not corrected, more trouble will develop when the machine is put into operation.

The Dial

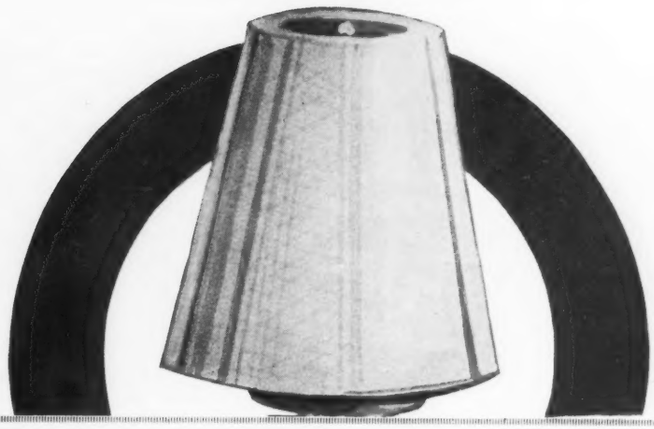
In order to produce good fabrics, the dial must be kept in first-class condition. Accidents and abuse will ruin a ribber dial faster than ordinary everyday use. The sum and substance of dial troubles is as we all know, bent walls and damaged cylinder slots. A great deal depends on how much damage is repaired. Excessive use of slot files on damaged walls is one of the sins of which many rib fixers are guilty. The walls of the dial must of course be smooth to assure free movement of the needles. In many cases better results could be secured if the fixer would spend a little more time using a slot straightener rather than a slot file.

Slot straighteners, or slot openers as they are sometimes called, are obtainable from textile supply houses to suit all gauges. They can also be made out of discarded knitting machine cylinder walls or thin pieces of tool steel. Many fixers in straightening bent dial walls drive them with a screw driver blade by



SLOT FILE HOLDER

placing it against a needle butt. A better job can be done by using a slot opener of the proper gauge, made for the purpose. Usually when a dial is damaged, the rough places appear on the upper edges of the slots, for this reason when filing is necessary (and it often is) it is best to grind one cutting edge off of the file; this will prevent it from cutting the bottom of the slot which does not need filing. Since we are on the subject of slot files, Brother Fixer, how many do you break? I am sure you break many and wear out very few. Slot file breakage can be eliminated entirely by making a slot file holder. This tool can be made out



B&C

Mercerized Yarns

For Hosiery and Underwear

BOGER & CRAWFORD,
Philadelphia

Chattanooga, Tenn. Lincolnton, N. C. Chicago, Ill.

of two pieces of ⅛-inch cold rolled steel about ½-inch wide. Cut one piece as long as the cutting edge of the file, and the other piece should be about 4 inches longer to serve as a handle. (See sketch herewith).

Frequently a dial will be slightly damaged on its upper surface all the way around. In such cases it is next to impossible to repair it properly by hand. Machine work, however, will do the job and do it right—by placing the dial on a centered arbor in a lathe and using a tool post grinder a good re-surfacing job can be done in a very short time and with little expense. Keeping the dial cap cams and parts in good shape will of course help prevent injury to the dial, since most dials are damaged by mechanical failures of the dial cap assembly. And last but not least, let's not forget that the dial and dial needles deserve a thorough and regular lubrication.

The Cylinder

Rib cylinders do not give a great deal of trouble, as a rule, they will outwear several dials by a long margin. Constant use will eventually cause the needles to cut grooves into the bottom of the needle slots at the upper edge of the cylinder. In many cases, the needle slots will be worn completely through, leaving a sharp edge which will injure the fabric while it is being knit. A cylinder worn in this manner has of course seen its best days and like other worn parts it should go to the scrap heap. There are a number of things which may help wear out a cylinder as described: Excessive weight on the take-up rolls, needle bands being too tight, needles bent inwardly, lack of lubrication—these are some of the things which can help cause the upper part of the needle slots to wear out prematurely. Cylinder walls are rarely broken; they do, however, become rough or damaged by broken needles, jam-ups and the like. Cylinder walls must of course be kept straight and free from rough places to avoid excessive needle breakage.

In the next article we will discuss the cam ring assemblies.

R. B. ORR

Handling Press-Offs on "Ringless"

EDITOR COTTON:

I note that "CONTRIBUTOR NO 6364" is interested in finding out how other mills are handling the problem of press-offs that are made when making so-called "ringless hosiery" by the use of 3-carrier alternating attachments. I agree with the contributor that this is indeed a problem and especially a problem of what can be done with the bad stockings found by the grey goods examiner after the stockings have been looped and seamed.

We have made quite a study of this problem and while we will also be interested in learning from others how they are disposing of the press-offs, feel that the contributor will be glad to learn what we are doing.

As full-fashioned hosiery manufacturers, we all realize that "ringless" press-offs must be topped on the leggers whenever possible. Of course the topping of press-offs should be done with the least amount of waste possible, so we have done the following:

We have taught our leggers that as soon as a press-off occurs on a legger they should stop the machine and top on the press-off at once. We realized in doing this that there is always a possibility of having a short length stocking but so far we feel that the number of short lengths we have are not due entirely to topped-on press-offs. Our short length stockings are no greater than before using this method. By topping on the stocking pressed off on the same needle bar head, we found that many so-called seconds were saved because the same cones of silk would finish the stocking, whereas if the press-off is topped on another head, the stitching and sometimes "washboard" effects would be different causing the stocking to become a so-called "second".

Of course when a stocking presses off in the leg narrowings, this stocking cannot be topped on immediately and these stockings must be topped on at a more convenient time. We did try having the knitter take the press-off that occurred in the leg narrowings and top it on the same head the following set but found that this caused too much loss of time and production.

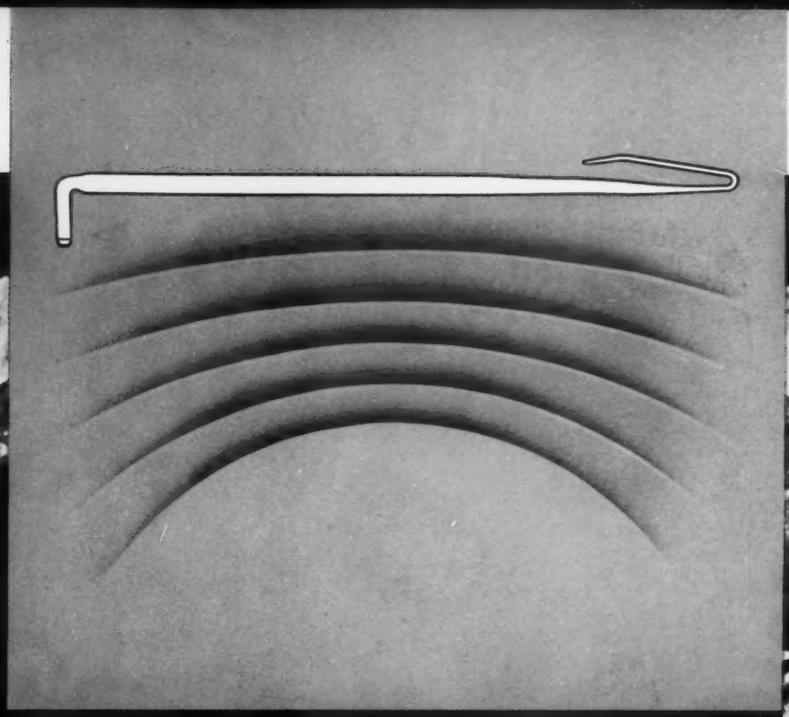
Twice a week we collect all press-offs from the leggers and also all spoiled legs from the footers and arrange them into sets according to the place that the stocking should be topped. In other words, our machines are 24 sections and if we can get 24 press-offs that should be topped before the start of the leg narrowings, we give a knitter this set and have him top on the entire set.

Twice a week we collect all the stockings from the grey examiners that cannot be mended and have the seams taken out of these stockings. We then make up sets that can be topped on at a certain point the same as the regular press-off sets.

However, in the matter of spoiled stockings in the grey examining we have found that it is advisable to mend all stockings possible even if the stocking must be placed into bundles after dyed and finished and sold for very little money. Because of not being able to backwind "ringless" stockings, the waste from these stockings is so great that it pays to mend them up somehow rather than to take out the seams and salvage as much material as possible by topping on the stockings.

For the contributor's benefit I might say that the problem of disposing of press-offs made on machines with alternating attachments is largely solved by watching to see that no great amount of press-offs ever accumulate and that the press-offs are topped on as fast as they are made. Knitters must be taught to know that no more backwinding can be done and therefore they must do everything possible to see that the press-offs made on their machines are disposed of as soon as possible. Knitters who resent topping on sets of press-offs and who allow press-offs to accumulate should not run 3-carrier machines, as no manufacturer can afford to allow knitters to run such machines due to the fact that press-offs so accumulated will eventually mean increased waste of material which will offset any profit that may be made by producing so called "ringless" stockings with 3-carrier alternating attachments.

R. S. (PA.)



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To produce smooth, uniform knitting your needles must not only be tough and strong; they must have the same degree of toughness and strength—in order to "give" equally and maintain equal tension in the knitting process.

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Machine precision is the keynote of Torrington manufacture. It is responsible for the exceptional uniformity of Torrington Needles in every important detail—temper, strength, finish, dimension. Use them and you will find Torrington machine-made uniformity reflected in the quality of your fabrics.

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4 Bars are straightened with a special device; brasses resurfaced; slots checked mechanically.

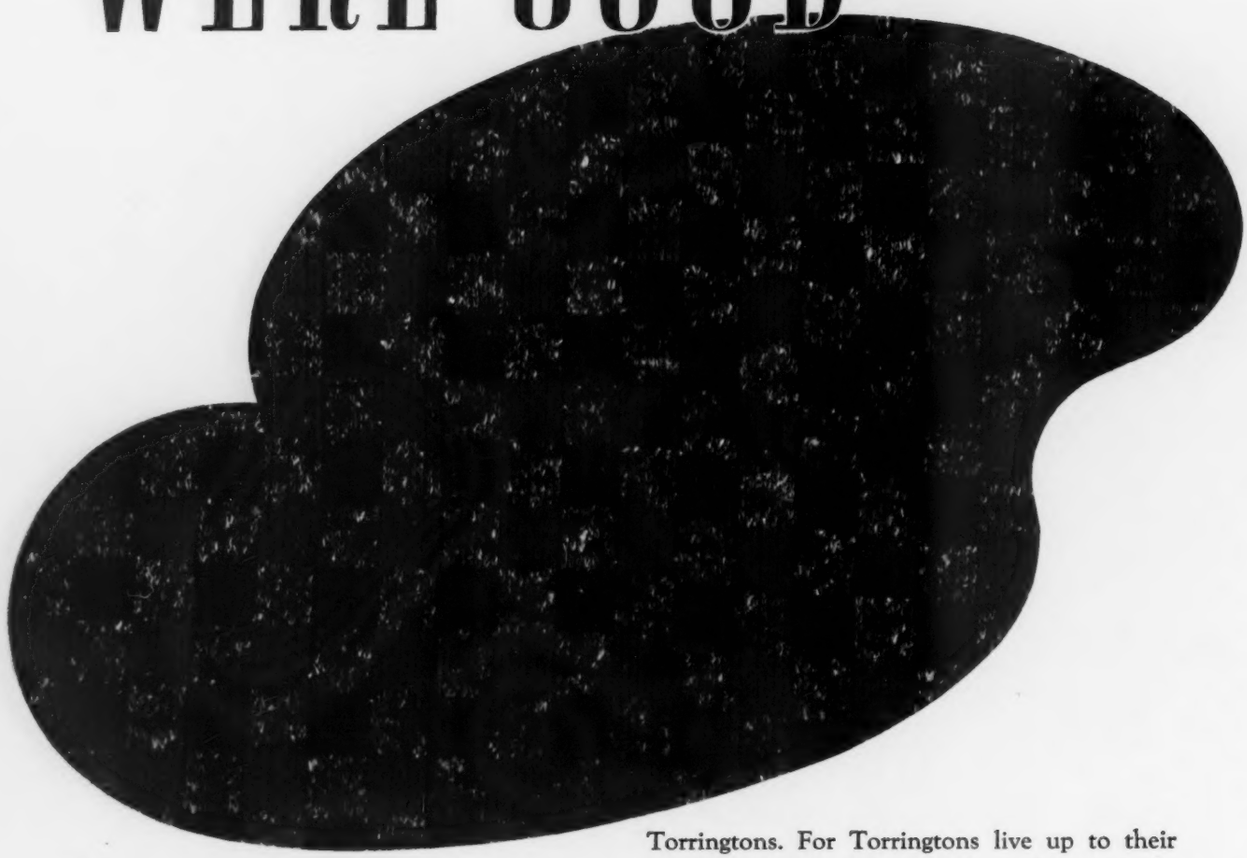
5 Bars are filled with Torrington needles; then straightened and gauged three ways; spaced also—by gauge.

6 Beards raised uniformly; checked by gauge for height and central setting.

TORRINGTON Spring Beard **NEEDLES**

—the needles

WERE GOOD



When you see a fabric like this you can be sure that much pains have been taken to produce it. Good materials were used. Good machines were operated by skilled workmen...and unquestionably—*the needles were good.*

Experienced knitters select their needles with as much care as they select their machines or their workmen. They know that it pays. It is no coincidence that so many of them are partial to Torringtons. For Torringtons live up to their standards for long life, strength, uniform smoothness and fine temper. Torringtons can be depended on because they are made by machines ...built to stand up under the punishment inflicted by modern high speed knitting production. *Your* knitting will benefit by their use.

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TORRINGTON NEEDLES

Latch

A Practical "Ringless" Problem

What can this man do that he has not already done to solve this perplexing difficulty? Ideas from mills with experience along this line are invited . . .

EDITOR COTTON:

We have a subject that we would like to bring up for discussion in "KNITTING KINKS".

Since going on 3-carrier work, on full-fashioned, we discovered that while making the toe of the stocking, and while taking off and putting on new sets (on the footer), the three main ends were idle. During this idle period, the part of the ends between the moistening troughs and carriers dried out to some extent. When we started the set on the footer, three complete courses were made with these dry ends, one on each carrier. These three courses made a slight dry bar across the stocking right at the instep—which as you know is a very critical part of the stocking. On the old single-carrier method, there was only one dry course and the second course was generally wet enough to impart a certain amount of moisture to the first course, but on the 3-carrier work, it is impossible to wet these three courses enough to eliminate the dry streak across the instep.

To eliminate this condition, we have had our footers wet the needles with a brush before starting each set. This solved our problem for the time being, but we soon encountered rust, even when we used a solvent with the water. Later we used another solvent to mix with our water, which softened the water and raised the pH considerably. This helped to eliminate much of the rust condition. We also tried to run three-carrier all through the toe in conjunction with our re-inforced yarn, thus cutting down the idle time of our yarn, which of course meant that the ends would only have a chance to dry out while a set was being taken off and a new one put on. This of course meant that we could not make as heavy a toe as we desire.

Naturally, we are very anxious to overcome this mis-matching condition and would like to know what other mills are doing about it. We would also like to know if this matter is affecting their seconds in the finished product. Any information and comments which your readers will give will be greatly appreciated.

CONTRIBUTOR No. 6428

Hosiery Shipments Advanced Sharply during September

Production goes up only 6 per cent above August, while shipments gain by 17 per cent; increased shipments applied to almost all types of hosiery . .

Hosiery shipments from American mills during September, 1935, amounted to 10,816,410 dozen pairs, an increase of 17 per cent over the preceding month and of 34 per cent over September of last year, it is revealed by the monthly statistical bulletin of the National Association of Hosiery Manufacturers. Much of the gain in September shipments is attributed to three factors, namely: the NRA decision of last May, which had the immediate effect of postponing demand for hosiery, heavy purchasing by wholesalers and retailers in anticipation of rising hosiery prices, and the maintenance of increased business activity throughout the country. Shipments during the first three quarters of the current year were five per cent higher than for the corresponding period of last year.

As compared with a 17 per cent gain in shipments over the previous month, production during September of this year, amounting to 9,576,644 dozen pairs, was only six per cent higher than in August. Since production was lower than shipments for the month, there resulted a reduction in month-end inventories of 1,239,766 dozen pairs. The total stocks of hosiery on hand at the end of September, 1935, were 18,054,062 dozen pairs.

Increases in shipments during September 1935, were shown for most types of hosiery. Shipments of women's full-fashioned silk hosiery, for example, increased six per cent over August, while the nine months' shipments of this type were 12 per cent ahead of last year. Shipments of men's half-hose (except wool) were 10 per cent higher than during the previous month; women's seamless shipments increased 22 per cent; woolen and ribbed goods shipments increased 43 per cent over August, which in turn was 100 per cent ahead of July; and cotton bundle goods shipments increased 48 per cent. Shipments of children's goods were at practically the same level as prevailed in August. There was the usual seasonal decline in shipments of anklets. For the first nine months of this year, however, both these latter groups showed gains over the same months of last year. Nine months' shipments of children's goods were seven per cent higher than for the corresponding period of 1934, and anklets shipments were 14 per cent higher than last year. Nine months' shipments of woolen and ribbed goods were 14 per cent below last year.

September production was ahead of the preceding month for all types with the exception of women's full-fashioned silk hosiery and children's goods. Because of the reduction in production of full-fashioned goods, with a concurrent increase in shipments, there was a drop in stocks on hand at the end of September as compared with the end of August. While these stocks were somewhat higher than those on hand at the end of September 1934, the level of demand for full-fashioned hosiery also was higher, and stocks of women's full-fashioned hosiery were turned over 7.3 times during the twelve months' period ended with September, 1935, as compared with 6.5 times for the twelve months' period ended with September 1934. With the single exception of anklets, such increases in production as were recorded in September were more than offset by increases in shipments.

Employment records for the month show an increase in number of workers receiving pay during September, amounting to approximately 3,900, bringing the total number of employees in the industry to 145,000. The gain was fairly evenly divided as between the full-fashioned and seamless branches of the industry.

THE KNIT GOODS MARKETS . .

Philadelphia, Pa., November 16, 1935.

RAW SILK showing less disposition to advance than it did a month back, the full-fashioned hosiery market has been less active during recent weeks. While most manufacturers are comfortably situated so far as business in hand is concerned, they are finding it more difficult to book additional business and there are a number of manufacturers of branded lines that have not announced increases except on a few of their numbers. Raw silk, after hitting a high mark late in October, showed a sagging tendency, dropping back about 20 cents, at which level there have been signs of stabilization.

Raw silk, however, is selling at about 90 cents higher than a year ago, notwithstanding the recent drop from the October peak. Quite a number of manufacturers became so imbued with the upturn in silk that they covered at the peak level and at present have seen some of their competitors buying for less. This action in the raw material has also slowed up the advances in full-fashioned hosiery quotations, which were made by the makers of unbranded goods last month. Another factor which has had a retarding influence on the full-fashioned situation has been the warm weather in most sections of the country during the last month. Hosiery manufacturers report that it has caused a falling off in retail sales and this in turn has slowed down distributors' requests for deliveries.

Branded Market Strong

Although leading manufacturers of branded full-fashioned hosiery have taken no action on the general advance which was expected to have developed by the first of this month, the market has continued to present a strong appearance, if somewhat less active. Sales of branded lines have fallen off during recent weeks but this is felt to be a natural result of the heavy buying done in August, September and early October, together with the factor of unseasonably warm weather. Unbranded full-fashioned hosiery mills continue to report substantial sales although their volume is considerably under that of September. A fair interest in goods for January and February shipments has been shown, not only by catalog houses, but also by chains and other large operators. It is understood some business of the latter type has been put through but the volume has not been large.

At least a few mills which believe in the permanency of the advance in raw silk prices, have covered their January and February requirements at an average price slightly under the present market. Although there are reports of cheap, full-fashioned goods still available to buyers, it is now difficult to locate 39-gauge merchandise at less than $5.00 in any volume and the quantity of 42-gauge conventional merchandise available at $5.25 is shrinking. Most mills are asking $5.50 for 42-gauge, single-carrier and many of them are reported to have sold at this figure. Substantial business has been done at $5.75 for 42-gauge ringless and as high as $5.90 has been paid for unbranded goods of this description.

On well-made 45-gauge stockings with lace welt $6.25 has been freely paid. But 42-gauge merchandise continues to be difficult to move, many buyers not being inclined to pay more for 48s than for good quality 45s. Sellers are emphatic in their predictions that the minimum price on 42-gauge ringless, unbranded for next spring will be $6.00 or $6.25 but a good many buyers feel that such predictions are too optimistic. Chain stores which were understood to be covered on full-fashioned hosiery for the remainder of the year at prices quoted last July, have been in the market for fair size quantities this month, lending support to the assertion that some mills have been unable to live up to their delivery promises on low-priced contracts.

The manufacturers who were spurred into buying raw silk at last month's prices are greatly concerned by the recent softness in raw silk. Some covered to the year-end at those quotations under the impression that any drop in silk at this time was an impossibility. The situation being now reversed, they are in a quandary as to whether they should try to even matters by covering for their post-holiday needs or waiting a while to see if raw silk goes lower. Manufacturers who stopped buying in October and did not follow silk to its peak, are naturally gratified by their foresight. Information in the silk market reveals that these comprise the largest producers, many of whom covered almost or actually to the end of the year at August-September quotations. Ordinarily they would have begun to contract for January and February deliveries by the end of last month but some had the feeling that such a rise as had taken place could not justify itself much longer.

Further Decline in Silk Price Would Aid Smaller Mill

Any further decline would benefit the smaller manufacturers rather than the large. These small mills were badly handicapped last month by the necessity of buying from day to day. In fact, several of the small mills were forced to curtail or close entirely during the upward rush of raw silk which placed them in an impossible competitive position. Most of the branded houses, like those identified with unbranded goods, are now operating on silk bought late in September, at prices considerably higher than in July and August. They feel that it is urgent to revise hosiery lists at the earliest possible date and indications are that regardless of changes in silk quotations, new unbranded hosiery lists will be issued about December 1, with branded goods being scheduled to follow a month later.

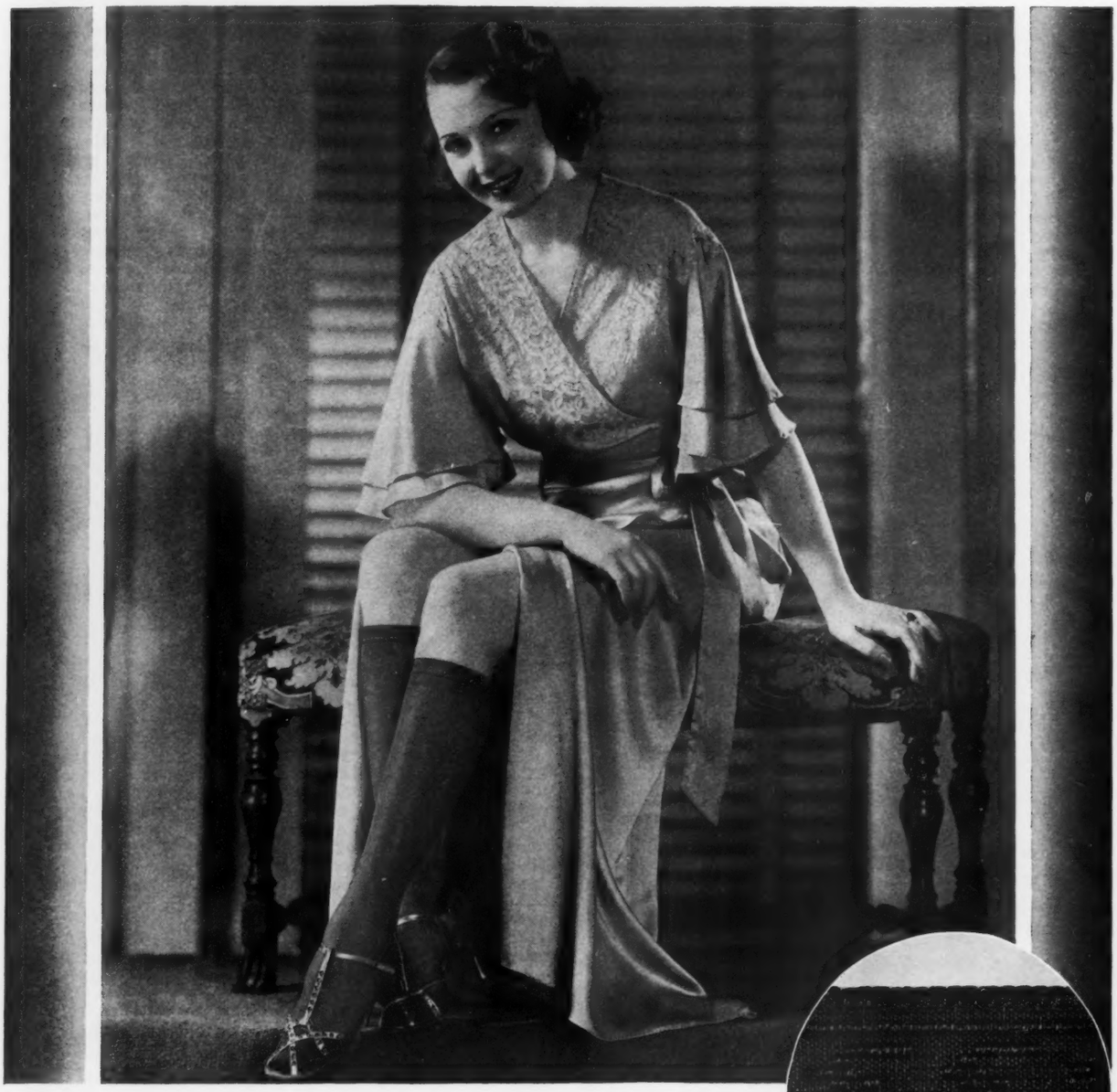
Julius Kayser & Co. announced they will take no further orders at current hosiery prices after December 25, which has been interpreted in the trade as the first sign of an advance on the better grades of branded goods. Along with other branded houses, Kayser raised two low-end numbers from $6.00 to $6.35 a dozen in September, unbranded prices having been advanced earlier that month. No action was taken on the better goods at that time mainly because one of the leading firms failed even to lift its cheapest style. It now appears certain that regardless of what decision this one house in question makes in respect to its low end number, there will be a general rise on branded goods by January 1. Prices on the latter would have advanced earlier, according to manufacturers, if they had not felt such a step would have had an unsettling influence on the holiday trade.

Would Increased Prices Retard the Volume?

Retailers are fearful that any sizable increase in retail prices of full-fashioned hosiery will have an immediately retarding effect on their volume and their arguments along this line have much weight with manufacturers. But if the raw silk market does not collapse, and most agree that this is impossible, silk hosiery prices must go up. Many in the trade believe it will be impossible for branded mills to offer for next spring anything lower than $1.00 retailer. Others feel that the jump from 79 cents to $1.00 would hurt sales considerably, at least for the time being and they argue that branded mills should give serious consideration to pricing their low-end numbers so as to make them not higher than 89 cent retailers. This can be done, many contend, by means of a mill price of about $6.75, giving branded houses an advance of approximately 75 cents from the low, which would about cover the rise in silk and give retailers a profit of slightly less than 40 per cent.

In the unbranded field it is possible to arrive at the conclusion that 4-thread 42-gauge, three-carrier stockings should sell on today's silk market at a minimum of about $6.45 with single-carrier merchandise at a low of $5.95. One year ago with raw silk selling about $1.00 lower than at present ringless goods were selling freely at $5.75 and the conventional were moving in large quantities at $5.25. With silk up approximately $1.00 a pound and on the basis of 11½ ounces of silk in a 52-course stocking, hosiery prices on today's silk market should be 69 cents a dozen higher than they were a year ago or $6.44 for ringless and $5.94 for conventional. Such an advance would be fair because the financial statements of mills for last year clearly indicated they were not making normal profits on the $5.75 and $5.25 prices then prevailing.

Comparisons of this kind make it appear that the full-fashioned hosiery manufacturing industry, unless it has succeeded in reducing its costs appreciably, which manufacturers say is not so, is today engaged in distributing its



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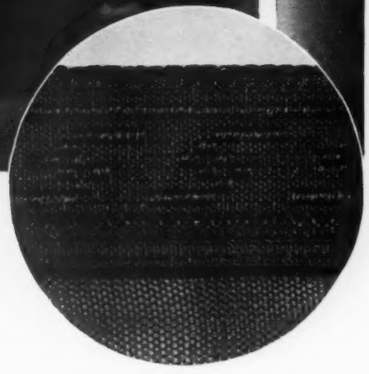

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products at almost a cost basis. It is evident that because of the highly competitive status of the industry and its large production facilities, it is giving the consumer extraordinarily good value for her money, which is indicated by the consumer giving the industry the largest volume it has ever received. The problem for manufacturers now is to work up gradually their prices in conformity with higher raw material costs and to make a profit.

It is still an open question how much business has been placed with the manufacturers for January and February deliveries. There are some full-fashioned mills that have refused to take a single order thus far for delivery next year but some larger operators are known to have placed orders for early 1936. Some in the trade believe that the usual January and February slump in full-fashioned prices will not be evidenced this year because of the relatively high silk market and the possibility of still higher prices for this raw material. Buyers on the other hand are looking for an easing in the market early next year. They feel that mills have substantial stocks, that there will be no shortage of merchandise, that the higher retail prices which must go into effect early next year will probably have a retarding effect on retail sales and that this will all add up to manufacturers exerting pressure to obtain business. Buyers also feel at that time manufacturers may abandon some of the price ideas they now hold.

Effect of Social Security Act on Knitting Mills

An analysis of the Federal Social Security Act as applied to the hosiery industry has been distributed to the trade by the National Association of Hosiery Manufacturers. This goes into detail on the application of the Act to the industry, pointing out that the cost of production will be increased beginning January 1, 1936, in view of the fact that payrolls will be taxable for unemployment compensation beginning on that date while payrolls will be taxed for old-age benefits beginning January 1, 1937.

It is estimated that in the years 1937, 1938 and 1939 the old-age tax to be paid by hosiery manufacturers and their employees will amount to $2,160,000 annually, half of this amount to be paid by employers and half by employees. This estimate is based on a 1934 industry payroll of $108,000,000 with total employees of 137,022. During these years the rate of tax is 1 per cent for both employers and employees. This rate increases to 1½ per cent in 1940, 1941, and 1942, 2 per cent for 1943, 1944 and 1945, 2½ per cent for 1946, 1947, and 1948, and 3 per cent for 1949 and thereafter. It is estimated that in 1949 and annually thereafter, hosiery manufacturers and their employees will pay a total annual old-age tax of $6,480,000.

A mill employing 100 persons working 50 weeks a year with an average weekly wage of $20.00 per employee, will pay $1,000 per year for old-age benefits in 1937, 1938 and 1939, a similar amount being paid yearly by the employees, for which the employer is liable. This amount increases to a maximum of $3,000 per year to be paid annually in 1949 and thereafter by employer and employee.

Old-age taxes on employees will be deducted by employers. A full-fashioned knitter averaging $40.00 a week will pay a weekly tax of 40 cents starting in 1937, increasing to a maximum of $1.20 per week in 1949. This pamphlet points out that under the Social Security Act the Federal Government tax pays no money to the states for unemployment compensation or insurance. The appropriation made to the states being limited specifically to the payment of the administrative expenses. The state itself levies an unemployment tax against the employer.

Shipments of women's full-fashioned increased from 18,984,297 in the first eight months of 1934, to 29,010,587 in the first eight months of 1935, which is a gain of about 11 per cent. Production increased from 19,449,708 for the 1934 period to 22,999,833 for the 1935 period. On the basis of these figures it is probable that full-fashioned hosiery production for the year 1935 will exceed 34,000,000 dozen pairs and shipments may exceed 32,000,000, both of which would be new high records.

Production of all types of seamless hosiery was reduced from slightly more than 50,000,000 dozen pairs in the first eight months of 1934 to approximately 48,000,000 in the 1935 period. Shipments were lowered from approximately 49,000,000 dozen to slightly more than 48,000,000. Shipment of women's seamless silk stockings increased approximately from 1,600,000 in the first eight months of 1934 to 2,173,003 in the corresponding 1935 period. Shipments of men's seamless hose increased from 20,400,000 in the 1935 period to 21,000,000 pairs with the gains being fairly well distributed throughout the various types manufactured.

Statistics show a total consumption of 104,280,000 dozen pairs in 1925 which increased to a peak of 116,920,000 in 1929; this declined to a low of 98,690,000 in 1930, which since has been gradually rising to approximately 103,433,000 dozen pairs in 1934. Women's full-fashioned consumption increased sharply from 12,291,000 in 1925 to 29,980,000 in 1929. This was comparatively unchanged during the first two years of the depression and then started a gradual climb to 31,326,000 in 1934.

Shipments of hosiery in September ran 34 per cent over the same month last year and 17 per cent over August. The sharp increase over the previous month and September of last year was attributed to the rush of orders that preceded price advances and it also reflected a general increase of business activity throughout the country. Shipments in the first three-quarters of the year rose 5 per cent over the corresponding period of last year. Shipments of full-fashioned hosiery rose 6 per cent over August, while running 12 per cent ahead of the first three-quarters of last year. Production of all types gained only 6 per cent over August so that the statistical position of the industry is thereby improved in the face of the 17 per cent increase in shipments. The consequent reduction in stock was 1,239,766 dozen pairs, bringing the total month-end inventory to 18,054,062 dozen pairs. Employment in September increased by almost 4,000, bringing the total up to 145,833 workers or 3 per cent more than were employed in August. This gain was about equally divided between the full-fashioned and seamless.

"Ringless" Suit Up in January

The next legal skirmish in the ringless hosiery patent situation created by the Julius Kayser & Co. and Textile Patents Corp., action against the Rosedale Knitting Co. of Reading, will take place January 16, 1936, here in the Federal District Court. Elaborate preparations are being made by both sides for this legal battle, which would indicate that a peaceable adjustment is not in prospect. If one is eventually accomplished, it would require considerable diplomacy in view of the fact the Rosedale concern has an anti-trust suit pending against eleven corporations and four individuals who allegedly comprise the syndicate which controls the output of ringless hosiery under the Charles A. Kaufman patent. It accuses them of a conspiracy to monopolize the ringless hosiery end of the industry. The entire full-fashioned hosiery field is following developments in this action with especial attention in view of the important place that the so-called ringless hosiery now has in the field.

Hope for Canadian Business

Hosiery and underwear manufacturers who only a half dozen years ago were doing a substantial business in different parts of Canada, have expressed interest in the new reciprocal tariff arrangement between this country and the Dominion. Several recall how, before the high tariff against American knit goods was put on by Canada that they used to do $100,000 to $150,000 a year in these two lines. That was before Canada levied the present tariff imposing a duty of 35 per cent ad valorem and $1.50 a dozen pairs on American hosiery of all kinds, while the duty on underwear, knitted garments and knit goods not specifically provided for became 45 per cent ad valorem plus an additional poundage duty.

Canada has become an important exporter of such items as silk hosiery. In 1934, for example, Canada exported 263,115 dozens of silk hosiery, which was a considerable gain over the previous year. There has been a very large growth of the knitting industry in that country in recent years and a number of representative American manufacturers, particularly in hosiery, established branch plants in Canada on account of the high duty. The knitting industry is centered mostly in the Provinces of Ontario and Quebec, with the former having the larger number.

Underwear Mills More Active

Most of the underwear mills are more active than for over a year. The situation as regards heavyweight merchandise contrasted with a year ago is particularly satisfactory. The last half of 1934 saw most mills waiting for re-

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orders on men's heavyweight cotton underwear that did not materialize. At present most of these mills are running up to capacity in the effort to satisfy the demands of jobbers and chains for merchandise wanted by the retail trade.

Among southern mills the situation as to immediate business as well as for orders for the new season is highly encouraging. Some of the larger southern mills making men's cotton ribbed union suits and shirts and drawers report that they are having the largest production in their history. In the case of several of the largest mills they had a very large stock of lightweight underwear on hand against the spring demand of this year. These same mills now have no stock on hand of any kind in lightweight underwear so that their large business already booked for next spring will have to be made up.

The lightweight underwear business this past season reached proportions on some numbers that mills did not expect and furthermore it has continued later than usual. The heavyweight business at the same time was delayed by buyers who were slow in placing business for this fall. From the present outlook, mills expect to run through the rest of this year and perhaps over until next on heavyweight lines. This will mean of course that many manufacturers will begin working on lightweight orders much later than a year ago.

Underwear buying for next spring on the part of many of the chains and all of the catalog houses is understood to have been completed. Recently there has been a noticeable increase in the interest shown by jobbers in next season's underwear and some substantial orders from these sources have been placed. Jobbers in many instances are not only placing larger orders than a year ago, but in many instances delivery dates are earlier than customary.

In men's underwear numbers, athletic shirts and woven broadcloth shorts make up the larger percentage as was expected. There is also interest in many parts of the country in the brief type underwear for men. Values in the combed athletic shirts are exceptional since prices made by parts of the industry are cheaper than buyers anticipated. Athletic shirts of good standard weight and made of carded yarns are being offered by large mills at $1.50 a dozen. Combed numbers of varying weight are being shown from as low as $1.60 a dozen to the better qualities that run over $2.00. The woven shirt business has settled down to the 80x60 broadcloth numbers for the largest volume of business.

In their operations for next spring it is significant that buyers who only a short time ago were putting down tentative orders are now calling up manufacturers and insisting that these tentative orders be made firm. Buyers are also making out their spring orders for earlier delivery than usual, the middle of December and January 1 being given as delivery dates in some instances. Such features furnish manufacturers with an optimistic outlook for the future. With the business already moving for next season, it is held more than likely that in the near future underwear manufacturers will take a firmer position as to prices. This part of the market is open for improvement considering the variety of prices, many of them low. This applies particularly to staple items, such as men's athletic shirts and woven shorts, as well as certain numbers of knit union suits.

With the current full demand in underwear developing far in excess of buyers' expectations and plans, resulting in slowness in delivery and scarcity in some items, it is natural to assume buyers would operate more freely ahead. The impression gains strength that hand-to-mouth buying on the part of most knit goods buyers will for a time at least be abandoned. Manufacturers are hopeful that such is the case and they are cheered over the prospect. They foresee better occupation for machinery and labor and in addition, an opportunity to price their merchandise at levels that will give at least a reasonable profit rather than the losses lately encountered.

It is expected now by some of the underwear mills that they can make an early move for business for the fall season of 1936 and that they will meet with better response on the part of the buyer than this past season. Underwear mills are operating just now at a production point that rarely if ever has been reached. In some parts of the underwear mills, such as the finishing, production cannot be further increased. It has been found some underwear manufacturers claim that labor will not work more than 40 hours a week despite inducements of extra pay.

Production in September among underwear mills making cotton or wool goods or mixtures of both was higher by 25 per cent than for the same month last year. Shipments of the same merchandise by mills was also higher, the gain this September being nearly 17 per cent over 1934. The figures of the Department of Commerce for the month further indicate that the heavier underwear, such as men's union suits of 9 pounds and over to the dozen did not hold up as well as the lighter underwear. In September this year the production of heavy union suits amounted to 157,042 dozens against 185,515 dozens a year ago. Similarly the shipments of these suits amounted this year for that month to 317,943 dozens compared with 399,522 in 1934 for the same month.

In the rayon end of the industry, September production this year amounted to 451,146 dozens; a year ago the production for the same was 406,893 dozens. Shipments were 442,548 dozens this September, which was a notable gain over the 387,792 dozens a year ago.

Underwear manufacturers and knitters in general have again been warned by the Underwear Institute of further advances in costs over the last two months. Roy A. Cheney, managing director of the Institute, in a letter to the industry, shows what these advances have been since September 1. In it, it was pointed out carded knitting yarn has increased 5.7 per cent since September 1, combed yarn has increased 6.3 per cent; wool yarn has advanced 19.2 per cent; raw silk about 14 per cent with no change being made in this period in rayon quotations.

It was also pointed out that reports from the trade indicated heavyweight lines were moving briskly and spring merchandise was being ordered in large quantities. Buyers see clearly the record of advancing material costs and undoubtedly anticipate further advances, the letter stated. "The raw material trade is protecting itself with higher prices and in some cases is booking yarn orders for only a definitely limited period. Underwear buyers are protecting themselves by ordering at your current price levels. What steps are underwear manufacturers taking to protect themselves, or do they still believe in Santa Claus," it asked.

The voluntary code for the underwear industry is up for consideration and the Institute is calling attention to its essential features. It points out that the question now before manufacturers is of accepting a means for self-regulation or the alternative of an inevitable effort of the Government to again try to regiment industry. The Underwear Institute states that the voluntary code has been reduced to the simple essentials, chiefly wages and hours of labor. It states that with no thought of attempting to alarm manufacturers it has marshalled the facts that make it seem clear that the industry is faced with the inescapable alternative of making a sincere effort to regulate its own conduct or to accept without complanit Government regimentation.

Advantages of Improved Cotton Varieties

(Continued from page 43)

made it imperative that the mills use every effort possible to select cotton having superior quality. Mills are fast realizing that to meet these new conditions of manufacture and to obtain the maximum advantage from them a good quality of cotton must be used in order to maintain good manufacturing conditions. Regardless of the quality of the machinery and personnel of a plant, it is useless to expect a high degree of quality, production and efficiency unless the raw product used is of excellent character. With the increasing demand for such cottons it is very important that the textile industry co-operate wholeheartedly with the state and federal experiment stations in developing, distributing and maintaining pure seed of improved varieties so that at all times there will be an ample supply of seed to fill the needs of the industry.

Studies thus far prove the advantages to both the growers and the mills of growing improved varieties. These improved varieties should be grown in large quantities by organized communities or counties in order to furnish the mills with large lots and thus command a premium to the growers.

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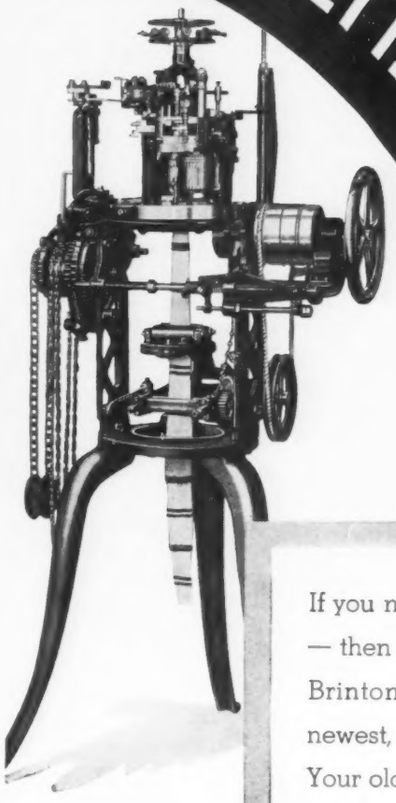

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REVIEW OF THE YARN MARKET

Philadelphia, Pa., November 16, 1935.

RAPID ADVANCES in prices due to the favorable position of spinners in respect to forward delivery business in hand and to the strength of the raw cotton market, which has advanced more than a cent in the last month, have been the most important developments in the sales cotton yarn field. The volume of new business booked by spinners has not been quite as large as in the preceding four-week period but deliveries have been larger, the best in some years in this respect.

Yarn producers, taking advantage of the well sold up condition of most, have been advancing yarns faster than the raw market but spinners say this widening of margins is fully justified by the lack of profit margins for so many years. In other words they assert yarns are simply coming back to a proportionate relationship with cotton that they have lacked for many years. Some of the largest cotton yarn spinners say the sales spinning industry is now in better shape in this respect than it has been for several years prior to 1929.

Spinners of two-ply carded weaving numbers are about 2 cents better off so far as margins go than at the beginning of this year. At that time spot cotton was selling for 12.65 or about 35 points above the level at the middle of November. In contrast with this slightly lower raw material market prices of carded yarns are approximately 2 cents a pound higher than during the first month of this year. Although this is not a definite criterion of the improvement that has been experienced by spinners, it indicates the important improvement in spinning margins. To offset it to some degree, spinners assert that the various staples of cotton required for the different counts and qualities have widened drastically in the last month so that they are really compelled to pay proportionately more for their raw material than the upturn in the spot market would indicate.

Two-ply carded weaving yarns, however, have been advancing much more rapidly than the single or carded knitting yarns and in fact are considered by a number of spinners to be high in relation to other divisions of the sales yarn market. This has been due to the exceptionally large demand from the weaving trade for yarns to be delivered during the remaining weeks of this year. Many spinners have informed yarn distributors that they do not need any additional business to keep their machinery fully active until about the middle of next January. The higher prices now quoted, however, are proving very attractive to spinners and many are finding it possible to work in additional poundage with the probability that shipments on some of the lower priced contracts are not being made at quite as lively a rate as heretofore.

One effect the improvement in spinners' position has brought about is the resumption of operations by a number of sales yarn spinners that had been closed down during the long time in which prices were reported to be at a loss or no profit level. During recent weeks yarn distributors have reported that quite a few new producers have offered them yarns which in some instances came from spinning establishments owned by manufacturers who felt that they could sell their yarns to better advantage than to consume them in their own merchandise.

Combed qualities are approximately 2 cents higher than a month ago. 30s single combed are now quoted at 42 cents compared with 40 cents the middle of last month, with about the same advances being registered in two-ply. While new business has not been as large in yarns of this type, shipments on old contracts have been the largest of the year and in the case of some spinners, the best in their history. Most of this business was placed when prices were several cents lower and large amounts on such orders are now going forward to underwear, athletic shirt, and other types of knit goods manufacturers. Government buying of underwear and hosiery by the Army Quartermaster Depot here, which is the purchasing agency for the clothing worn by the Civilian Conservation Corps as well as the Army, has been of material help to combed yarn producers. Government specifications for underwear of this type call for 22s, 24s, or 26s combed.

The first advance in mercerized yarns in more than a year was announced recently by the producers of this type yarn who explained that it was brought about by increases in long staple cotton, or in the price of combed yarns in the case of those establishments which depend on the sales market for its raw material. Prior to the announcement of the increase, the largest volume of business in mercerized yarn was booked that has been noted in this market for many years, producers reporting that within a few weeks approximately 6,000,000 pounds were sold.

All types of knitters placed contracts for mercerized six months ahead, a particularly large volume being done with makers of infants' hosiery. Mercerizers also explained that the advance in silk had helped mercerizers in that quite a few producers of cheaper types of hosiery were reducing the amount of silk used and increasing their consumption of the lower priced mercerized. Heaviest contracting in these yarns was around 68 cents for 60s two-ply, which was nominally held at the time at 70 cents. At present, sellers quote this count at 72 cents. Mercerizers had been complaining that their margins were insufficient and many in the market have been criticizing their merchandising. In other words, they criticised these producers for selling themselves so far ahead just prior to announcing advances in prices.

One of the larger mercerizers in explaining the amount of business in recent weeks, said that this was brought about by the advance in the price of silk, which increased the takings by full-fashioned hosiery manufacturers considerably. Several of these knit-

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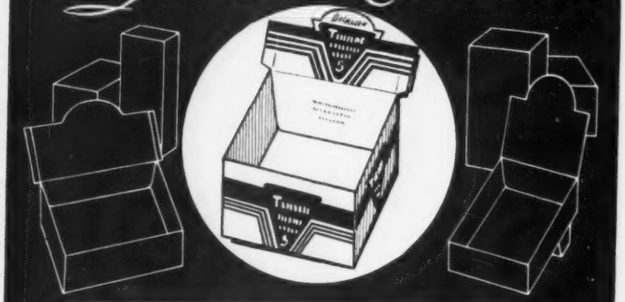

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ters that formerly made an all-silk hose, in their next season's line will turn out a stocking with mercerized foot and top. They also said that poundage taken by the infants' wear trade had been exceptionally large. These mills, as in the previous season, will produce the greatest number of their lines from cotton and mercerized yarns in preference to rayon.

Cotton yarn spinners are complaining of the mounting taxes, Federal and State, which they are now compelled to pay. One local establishment, that of Boger & Crawford, reports that it is now paying on its plant in Philadelphia and its spinning establishment in Lincolnton, N. C., the following taxes: North Carolina franchise tax, Pennsylvania personal property tax, processing tax, railroad emergency, Pennsylvania gas tax, North Carolina sales tax, corporate loan tax, employment tax, old age pension, Pennsylvania capital stock tax, United States capital stock tax, Lincoln County tax, City of Philadelphia tax, Pennsylvania income, North Carolina income and the Federal income tax. Concerns of this type state that in some cases about 14 per cent of their overhead is now represented in the payment of taxes of various types.

During the last four weeks worsted yarns have again touched a new 1935 peak with 2-20s, 50s, being held at present at $1.20. Spinners of yarns of this type are well sold up for the balance of this year and those that specialize in bathing-suit yarns for even further periods ahead. The fact that some spinners of these yarns will not accept further orders with the drastic advances which have occurred in them lead some in the cotton yarn field to look for a substantial increase in the poundage taken by the outerwear trades which will be looking for such yarns as cheapeners in view of the high prices quoted for worsted.

Enjoyable Golf Tournament Held at Pinehurst by Carolina Yarn Association

The annual golf tournament and entertainment of the Carolina Yarn Association, held at Pinehurst, N. C., on November 1 and 2, attracted an attendance of more than 400, including members of the organization and their friends among knitting and other mills and others. A two-day golf tournament was conducted, and there were 210 entrants. A long list of attractive prizes were awarded in this event, and the winners included:

Low Net Winners: M. B. Foil, H. C. Patterson, Henry Kelly, T. E. Pennington, R. L. Bothwell, Y. Nishemoto, Dave Long, J. B. Frierson, Jr., J. V. Maver, Ed Steere, A. G. Schautz, Ray W. Weaver, Brown Mahon, Coles Gaither, E. S. Gregory, George Sharpe, T. H. McKinney, B. D. Gaddy, W. W. Crews, Fred Lemmons, T. Max Watson, H. T. Cosby, J. Y. Pharr, K. C. Loughlin, W. K. Bigelow, F. V. Lewis, J. R. Gaither, J. L. Keiger, C. D. Gray, H. L. Dalton, N. Lewis, A. G. Myers, S. O. Stone, Spencer Love, B. R. Hunter, P. H. Thompson, W. F. Denning, and W. Sylvester.

Low Gross Winners: H. P. Hardin, F. M. Duncan, L. M. Graves, George Graves, R. P. Shapard, and Bruce Griffin.

A banquet was held on Friday night and another on Saturday night, with elaborate vaudeville entertainment on each occasion. Other forms of entertainment were enjoyed during the occasion. The committee chairmen of the organization were: Entertainment, Robert Howerton; invitations, Harry I. Dalton; prizes, N. P. Murphy; and tournament, Sam Diggle.

The officers of the organization are: President, Bruce Griffin; vice-president, Henry Stokes; K. C. Loughlin, secretary; and Joe R. Morton, treasurer. The members of the Carolina Yarn Association include:

Atwood Machinery Co.; Aberfoyle Mfg. Co.; Alamance Yarn Co.; American Bemberg Co.; American Enka Corp.; American Yarn & Processing Co.; C. A. Auffmordt & Co.; Barnhardt Brothers; Carolina Dyeing & Winding Co.; Cannon Mills; Celanese Corp. of America; Cetwick Silk Mills, Cosby & Thomas; Dixie Mercerizing Co.; Dixie Throwing Co.; DuPont Rayon Co.; Duplan Silk Corp.; Elmore Corp.; Fidelity Machine Co.; Hemphill Co.; E. C. Holt & Co.; Ideal Mercerizing Co.; Industrial Dyeing Co.; Industrial Rayon Co.; Johnson Mills Co.; Kaumagraph Co.; R. K. Laros Co.; Oscar Heineman Corp.; North American Rayon Co.; Chas. B. Paulus; Paramount Textiles; Scott & Williams; Sellers Mfg. Co.; Smith-Drum & Co.; Standard-Coosa-Thatcher Co.; A. M. Tenney Associates; Textile Banking Co.; Textiles, Inc.; Textile Machine Works; Torrington Needle Co.; Tubize Chatillon Corp.; U. S. Testing Co.; Viscose Co.; Waddill Printing & Litho. Co.; D. F. Wallace; and William Whitman Co.

International Heating and Ventilating Exposition

Enthusiastic support, reflecting improved business confidence, is evident now three months in advance of the opening of the Fourth International Heating & Ventilating Exposition. The national professional societies, the local committees, and the Exposition administration are co-operating in a way that must insure the finest Heating and Ventilating Exposition yet held. The Fourth Exposition comes to Chicago during the week of January 27-31, 1936. The International Amphitheatre in which it will be presented is one of the most modern and ample settings in which this air conditioning exposition has yet appeared. The Fourth International Heating & Ventilating Exposition, known parenthetically as The Air Conditioning Show, comes to the Midwestern territory at an opportune time. Previous expositions have been held in Philadelphia, Cleveland and New York. Considering the brief number of years since its inauguration the Heating & Ventilating Exposition is taking an outstanding place among all the established industrial shows. Its exhibits this year will cover a number of fields which while large in themselves, are all interested in the problem of human health through proper air conditioning.

Link-Belt Moves Executive Offices

The executive offices of Link-Belt Company, for many years located at 910 South Michigan Avenue, Chicago, Ill., have been moved to the Bell Building, 307 N. Michigan Ave., Chicago, where the company occupies the entire 23rd floor and the north half of the 21st floor.

Henry W. Foulds Elected Vice-President in Charge of Permutit Company Sales

According to W. Spencer Robertson, president of The Permutit Company, New York, N. Y., sales of the company's water softening equipment have increased so rapidly, and so many new products are being developed, that a decided expansion of selling scope is in sight. To correlate and direct all sales, promotion and advertising, Henry W. Foulds has been elected vice-president of The Permutit Company.

Mr. Foulds, a graduate chemical engineer, brings to his new position 20 years' experience in selling. This experience embraces a number of years in the export business in South America; the positions of vice-president in charge of distribution of a well-known line of refrigerators and vice-president of a pump manufacturing company, and a diversified background in management and organization. Assisting Mr. Foulds will be L. S. Ferguson, manager of industrial sales; O. P. Harris, manager of domestic sales, and H. H. Wilkinson, advertising manager.

PERFECT WET - FINISHING

DETERGENT PRODUCTS CORPORATION
Columbia, S. C. Charlotte, N. C. ATLANTA, GA. Texarkana, Ark. Buffalo, N. Y.

For better detergent action, quicker emulsification, superior resistance to lime, greater stability to acids and alkalies

We recommend

"Laurel Supersulfates"

[U. S. Patent Applied for]

Powders and Gels

These new condensation products, the result of extensive research, offer you a new high in processing all fibers—silk, wool, cotton and rayon. Write for samples and directions for use.

Laurel Soap Manufacturing Company, Inc.
Wm. H. Bertolet & Sons
Established 1909
2600 East Tioga Street Philadelphia, Pa.
Warehouses
Charlotte, N. C. Chattanooga, Tenn. Paterson, N. J.

For best results use

READING NEEDLES

TEXTILE MACHINE WORKS
READING, PENNA.

Arguto NON-METALLIC

20 years without a drink—

"First bought 'Arguto' bearings 25 years ago . . . still buy them because they're alright."
—unsolicited testimonial

ARGUTO OILLESS BEARING CO.
Wayne Junction, Philadelphia, Pa.

at your elbow . .

COMPLETE SILICATE SERVICE

FIRST you need dependable silicate of soda and next you ask "When can I get it?" P. Q. Silicates of Soda are as near as your telephone.

Eight plants east of the Rockies make P. Q. Silicates, and distributors are located in 60 cities. Often the availability of P. Q. Silicates has saved a mill hundreds of dollars.

Tap this reservoir of silicate service now. It's convenient—it's reliable.

PHILADELPHIA QUARTZ COMPANY
General Offices and Laboratory: 125 S. Third St., Philadelphia.
Chicago Sales Office: Engineering Bldg. Stocks in 60 cities.

SILICATES OF SODA

IMPROVE RESULTS - LOWER COSTS

Step-up Production with—

VICTOR
MILL STARCH
"THE WEAVER'S FRIEND"

It Boils Thin . . . Has More Penetration
Carries the Weight into the Fabric

Distributed By:

DANIEL H. WALLACE - SOUTHERN AGENT - GREENVILLE, S. C.
C. B. ILER, Greenville, S. C. F. M. WALLACE, Birmingham, Ala.
L. J. CASTILE, Charlotte, N. C.

Manufactured By

THE KEEVER STARCH CO., COLUMBUS, OHIO

Thorough bleaching or only surface bleaching?

Whether you are getting complete or partial bleaching is highly important. Thorough bleaching alone assures a more even white.

Kali Research has developed PEROXOL so that you can be absolutely sure of thorough bleaching. When you use PEROXOL you make assurance doubly sure that you are not only getting more even bleaching and better penetration of the bleach solution, but a product that softens instead of harshens the fibres. PEROXOL is a modern product.

PEROXOL opens up the fabric so that the bleaching solution will penetrate thoroughly, thus completely bleaching the fibres not merely the surface.

Tell us about your bleaching problems and we will solve them for you.

The KALI Mfg. Co.
Manufacturing Chemists
1410 N. Front Street, Phila., Pa.

SOLVAY
TRADE MARK REG. U. S. PAT. OFF.

PRODUCTS

SOUTHERN DISTRIBUTORS:
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Woodward Wight & Co., New Orleans, La.
•
J. T. Sudduth & Co., Birmingham, Ala.
•
Miller - Lenfestey Supply Co., Tampa, Miami and Jacksonville, Fla.
•
Burkart-Schier Chemical Co., Chattanooga, Tenn.
•
Paper Makers Chemical Corp., Atlanta, Ga.; Marrero, La.
•
F. H. Ross & Co., Inc., Charlotte, N. C.
•
Yarbrough Laundry Supply Co., Nashville, Tenn.
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Ideal Mfg. & Sales Corp., Memphis, Tenn.

SOLVAY products are sold on the basis of *actual* Alkali content.

SOLVAY 58% Soda Ash *contains* 58% of *actual* sodium oxide.

SOLVAY 76% Caustic Soda *contains* 76% of *actual* sodium oxide.

Specify SOLVAY — the standard of SODA since 1881.

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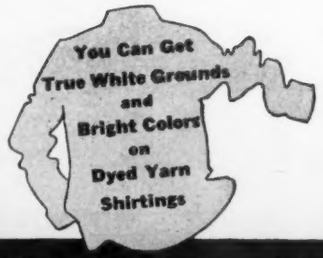
SOLVAY SALES CORPORATION
Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 RECTOR ST., NEW YORK
CHARLOTTE, N. C.



And Save 25 to 30% in Peroxide Costs

by Bleaching with

SOLOZONE

REG. U. S. PAT. OFF.

Bleaching dyed yarn shirtings with a peroxide solution made up from SOLOZONE (Du Pont Sodium Peroxide) is a sure way of getting the true white grounds . . . full brightness of color . . . that mean a satisfied trade and profitable operation.

SOLOZONE is profitable from an operating standpoint, too. It gives savings of 25 to 30% in peroxide costs, because of its high content of available active oxygen (20.5% + by weight) and relatively low price.

Write to the R & H office nearest you for further details on this low-cost way to high-quality cotton bleaching.

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The R. & H. Chemicals Department
E. I. DU PONT DE NEMOURS & CO., INC.
Wilmington, Delaware

District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco

BOSSON & LANE, INC.

Manufacturing Chemists

Established Jan. 1, 1895

Works and Office, Atlantic, Mass.

High Grade Castor Oil Products

Sulphonated-Saponified

Soluble Oil **Para Soap Oil**
Turkey Red Oil **Castor Soap Oil**
Soluble Pine Oil **B & L Bleaching Oil**

PENTRALYN,

a superior assistant for Beam, Spool, Bobbin and Package Dyeing.

Bleach Softener CSO, Finishing Sizings and Softeners

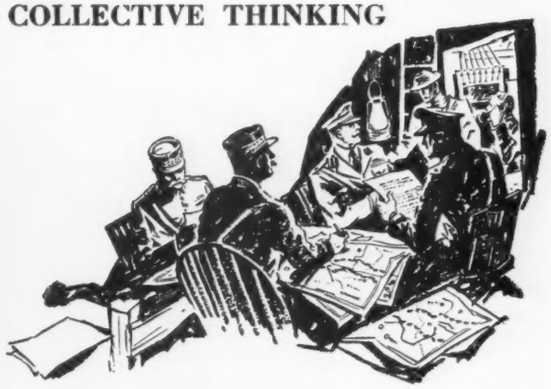
VICTROLYN,

the economical assistant in warp sizing. Penetrating, Lubricating and wholly efficient.

B & L Bleachers' Bluings and Violet Tints

GOOD MONEY VALUES
-FREEDOM FROM WORRY

COLLECTIVE THINKING



It Won the World War for the Allies
It Can Win Industrial Battles for You

Not until the Allies thought and acted collectively (rather than individually) under one directing head, did they achieve victory.

Collective thinking can also win INDUSTRIAL battles for YOU, such as chemical processing problems. Research in textile chemistry is now so prolific and styles change so quickly, that no one processing executive can adequately meet every new situation.

The size of the average chemical processing plant or department does not permit a STAFF of chemical specialists. This average plant or department must therefore utilize outside assistance.

A-H Consultation Service supplies this need with a staff of specially trained chemists assisted by a complete, modern laboratory and a company experience of 120 years. These chemists are glad to study your sizing, finishing or printing problems, free of charge, under the direction of your chemical processing executive.

Let collective thinking help you in checking up on routine methods as well as in meeting new situations.

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Sizing and Finishing Gums and Compounds . . Softeners . . Soluble Oils . . Tallow . . Waxes . . Soaps . . Flour . . Dextrines . . Starches . . P gment . . Colors and Lakes . . Ammonia . . Acids . . Blue Vitriol . . Borax Bichromate of Soda . . Bichromate of Potash . . Liquid Chlorine . . Chloride of Lime . . Caustic Soda (solid or flaked).

Arnold, Hoffman & Co., Inc.

Established 1815—Plant at Dighton, Mass.

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BECCO
HYDROGEN PEROXIDE
BECCO
TECHNICAL SERVICE

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An excellent, willing combination for every bleacher

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BECCO

BUFFALO ELECTRO-CHEMICAL CO.
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1 barrel of Caro-Gant replaces 3 barrels of Sizing Compound

HERE is the most efficient as well as economical and convenient Cotton-Warp Dressing that will assure you cleaner looms, greater production and higher quality fabrics.

Being 100% pure, with no water or inert vehicles, it goes further—1 barrel of Caro-Gant will replace 3 barrels of sizing compound. Caro-Gant is the most concentrated, effective and economical adhesive-colloid and softener yet developed for sizing of Cotton Warps.

The surprising effectiveness and greater economy obtained with Caro-Gant will be demonstrated to you without obligating you in any way. Write

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costs less to install, reduces power bills, minimizes maintenance charges and boosts production.

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HIGHFLEX JR. RUBBER BELTS...

developed especially for textile drives—maintain exact tension, reduce slippage, maintain higher and uniform speeds, and increase production. The B. F. Goodrich Co., Mechanical Rubber Goods Div., Akron, Ohio.

Goodrich HIGHFLEX JR. *Belting*

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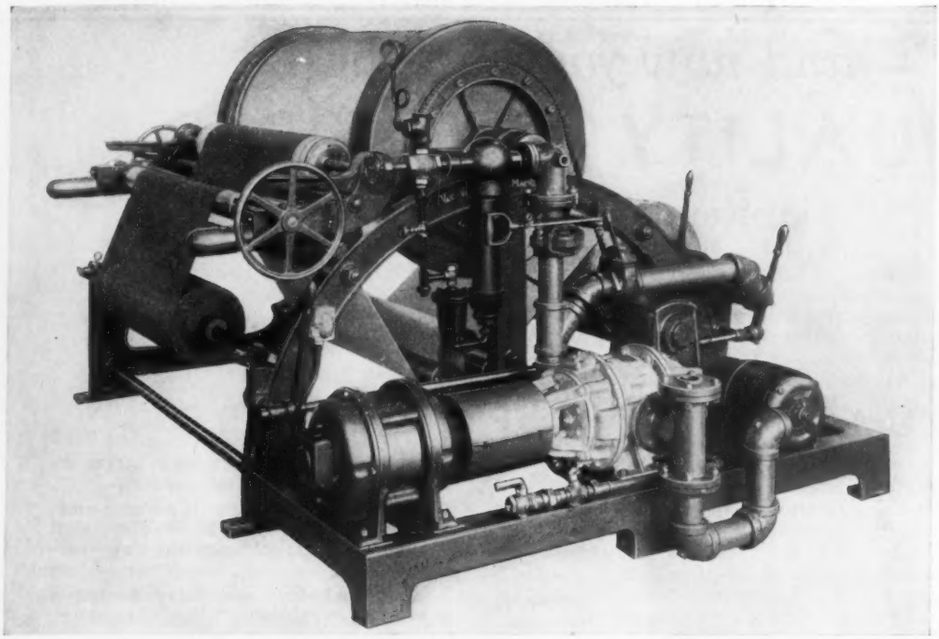
Celebrated
LAPPINGS and BLANKETS for PRINTING MACHINES
CLEARER, ROLLER and SLASHER CLOTHS.
For Best results in Sanforizing use
KENYON'S ENDLESS WOOLEN BLANKETS



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DECATING

gives a

Better Hand

Richer Color

Evener Finish

to many fabrics.

We have found that, in addition to the rayons regularly decated, this machine improves the finish of many other fabrics. This improvement is accomplished quickly and at very low cost.

Van Vlaanderen's new Decating Machine is specially built for rayon. It does the fastest and highest quality decating that can be done. Send a piece of cloth, which we will decate and return to you for comparison.

Van Vlaanderen MACHINE COMPANY
370 Straight Street, Paterson, N. J.
World's Largest Manufacturer of Silk & Rayon Processing Machinery

Cotton Card Grinders

Woolen and Worsted Card Grinders

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All Makes of Grinders Promptly and Thoroughly Repaired

B. S. ROY & SON COMPANY
Established 1868
Worcester, Mass., U. S. A.
Greenville, S. C.: 21 Byrd Blvd.

and **NOW** *a*
CONTINUOUS
one-piece
FENCE POST
with all
STEWART
Non-climbable
Chain Link Wire **FENCES**

Stewart Engineers have long been advocates of Open-Section Beam Framework in Chain Link Fence Construction. For some time Stewart Chain Link Industrial Fences with Beam posts, have been furnished with an integral (one-piece) extension arm. Now this important exclusive feature is extended in our 5 barbed wire overhanging type of Industrial Fencing (two way protection). This new construction eliminates the need for fittings and separate extension arms as so easily removed or broken.

Stewart FENCES

For "actual sample" demonstration, write
The World's Greatest Fence Builders Since 1886.
The STEWART IRON WORKS CO., Inc.
106 Stewart Block . . . . . Cincinnati, O.
Agents wanted in unallotted territories.

—and now you have BOTH

QUALITY *and* SPEED

in Rayon Warp Sizing

Most successful mills don't lower quality to gain speed in warp sizing. They have found the following six advantages of the new Johnson sizer assure higher speeds, and at the same time, produce better warps. Loom production is increased, and there is no need for excessive boiling off to remove baked-in size that is apt to show spots and streaks in the goods after dyeing and finishing.

These successful mills use the Johnson Sizer because

FOR QUALITY . . .

1. It reduces stretch to as little as 2% when desired.
2. Cylinder and size solution temperatures can be exactly measured and controlled.
3. Warp conditioning unit prevents baked size—frequent cause of excessive boil-off spots and streaks which show up after dyeing and finishing.

FOR SPEED . . .

4. Johnson's cylinders are now larger in size—increasing drying capacity.
5. The new conditioning unit permits running ALL FIVE cylinders heated, and, therefore, permits speeding up machine.
6. New beam holder and drive, designed heavier to meet modern high speed requirements.

If you haven't seen this new way of rayon sizing we will gladly demonstrate it for you.

CHARLES B. JOHNSON

PIERCY AND HOLSMAN STS., PATERSON, N. J.

REPRESENTED BY

Joseph Barnes, New Bedford, Mass. — A. V. Anthony, Santiago, Chile — Carolina Specialty Co. Charlotte, N. C. — Unisel, Ltd., Manchester, England — Roberto Zander, Buenos Aires, Argentine

This is the Age OF SPEED and HIGH DRAFT SPINNING

Ring Travelers of greater endurance are necessary. Wentworth Double Duty, Wentworth Gravity, Gravity Express and Lowboy meet these new requirements.

New Duplex Twister Travelers — C. E. F. Twister Travelers

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KENWOOD WOOL PRODUCTS REG. U.S. PAT. OFF.

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Sanforizing Blankets

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KENWOOD MILLS

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ATLANTA HARNESS - REEDS FRAMES - HEDDLES ATLANTA HARNESS & REED MFG. CO. ATLANTA, GEORGIA

"Silicosis"
A DUST DISEASE Hazard!

PREVENTION of dust and "fly" in cotton mills, comes with raw stock SPRAYING • by the

BRETON MINEROL PROCESS

It is a system of spraying MINEROL • a specially processed product • upon textile and other fibres.

A dust and lint reduction of from 50 to 70% has been recorded by many mills. Aside from improved health and sanitary conditions, the primary object is to make cotton fibres more pliable, eliminate kinkiness, reduce invisible loss and prevent static.

"SILICOSIS" hazards demand larger compensation insurance premiums. Reduce your liability thru the

BRETON MINEROL PROCESS for RAW COTTON TREATMENT

BORNE SCRYMSER COMPANY
Originators of the BRETON MINEROL PROCESS for CONDITIONING COTTON
17 BATTERY PLACE • NEW YORK

HERMAS

SEWING AND ROLLING MACHINE

Insures continuous operation of shear, tenter, singer, brush, or other finishing or processing machine. While one roll is being processed another is built up. When first roll is run off the second is automatically sewed to it in a few seconds time—then the process is continued. Eliminates need for extra man formerly required to assist in lifting roll from machine.
Will handle up to 150,000 yards of cloth in 40 hours. Measures 36" front to back. Descriptive folder free.

HERMAS MACHINE COMPANY
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Southern Representatives—Carolina Specialty Co., Charlotte, N. C.

"IMPROVED SPINNING would put us on the profit side."

• Many mills that are today coasting along at no profit or a small loss could show at least a little profit by the simple step of replacing worn rings. High-polish DIAMOND FINISH rings would immediately raise the spinning room output 10% to 20%, because of increased speeds. Ask your "super" how much faster he could run with perfect rings!

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Makers of Spinning and Twister Rings since 1873

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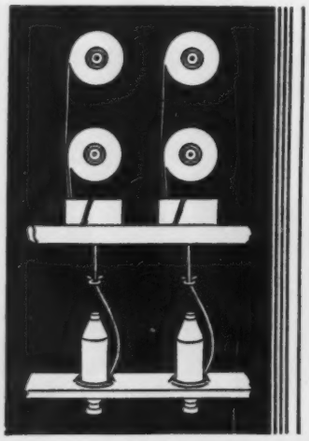

DON'T LOSE *money* Twisting *from* Spools *Use the*

ABBOTT SYSTEM

write and see why

to ABBOTT MACHINE CO.
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STANDARD RING TRAVELERS

BEST MEET THE SPECIFIC REQUIREMENTS FOR SPINNING AND TWISTING

THE BOWEN PATENTED BEVEL EDGE TRAVELER
VERTICAL OFFSET TRAVELER
FOR
EVEN SPINNING AND TWISTING
VERTICAL NE-BOW TRAVELER
FOR
SILK, RAYON AND FINE WORSTED YARNS. A TRAVELER THAT WILL NOT UNTHREAD. ESPECIALLY DESIGNED FOR LUBRICATING RINGS.

Write For Samples and Particulars

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"A TRAVELER FOR EVERY FIBRE"

Experimental Engineering

Metal Stampings——Commercial Press Work.
Special and standard small parts made to specifications.

Dies, tools, models, special screws, cams, studs and brackets.

BOYCE WEAVERS KNOTTERS

Mill Devices Company, Inc.
Gastonia, North Carolina

for greater operating economies

Condor PRODUCTS

COMPENSATED BELT
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RUBBER COVERED ROLLS

Cone Belt	Steam Hose
Air Hose	Suction Hose
Acid Hose	Molded Rubber Goods
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THE MANHATTAN RUBBER MFG. DIVISION
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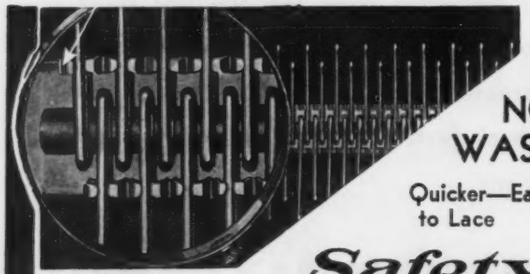
EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY



NO WASTE
Quicker—Easier to Lace

Safety
REG. U.S. PAT. OFF.
BELT HOOKS

See the Steel Binder Bars

Ask your Jobber—NOW!

Safety Belt Lacer Co., Toledo, Ohio

Fully 25% of All Cotton Textile Spindles in the United States are Operated on the Loper System.

Ralph E. Loper Co.
INDUSTRIAL ENGINEERS

Specialists in Textile Costs Over 22 Years
FALL RIVER, MASS. GREENVILLE, S. C.

There was a time, doubtless, when the attire of the gentleman in the picture would have been admired as the very latest thing. There was a time, also, when it would have been considered good management to polish or scrub floors by hand methods. But not now! The question is no longer "Does mechanical maintenance pay?"

The Question Now is

"Which Mechanical System is Best?"

The answer depends upon you! Do you want a floor maintenance system that is planned exactly for your needs . . . the type of floor, area, size of mill? Do you want a system that can be serviced promptly and expertly by representatives near you? Do you want a system that provides both machines and materials for floor maintenance, incorporating thirty years of experience? If so—your choice is FINNELL!

The FINNELL is as logical to clean floors in the spinning and weaving room as is labor saving machinery for spinning and weaving. FINNELL scrubbing has a definite effect in increasing morale, reducing spoilage, speeding up output. To get floors equally clean by hand is impossible except by the most extravagant use of time and labor.

Why not investigate now and quit wasting time and money with old fashioned hand methods which get floors only half clean? You're paying for clean floors — why not have them? Ask for information—or FREE DEMONSTRATION. Address FINNELL SYSTEM, INC., 1312 East Street, Elkhart, Indiana.

FINNELL

Est. 1906

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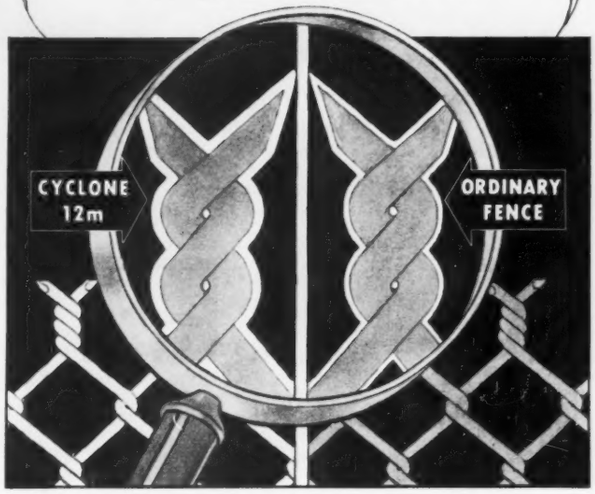
When you buy fence, get Cyclone's EXTRA MARGIN of protection



● An EXTRA MARGIN of protection—an extra heavy coating of molten zinc that protects the fence and its fittings against rust and corrosion—that's what every purchaser of Cyclone 12-m fence gets.

Test its extra heavy coating by the Preece super-weathering test. See how it takes a full twelve of these immersions without failing—where ordinary fencing fails at 5 to 6 immersions. This double coating, this double test resistance, is the EXTRA MARGIN of protection which Cyclone gives you in every foot of Cyclone 12-m chain link fence.

Why gamble on what corrosion will do to the fence that you buy? Before you choose, be certain. Get the facts about what the Preece Test shows.

Every prospective purchaser of fence is invited to mail the coupon for the famous Cyclone book—"Fence—How to Choose It—How to Use It". It tells how to get the *most* for your fence dollar.

CYCLONE FENCE COMPANY
General Offices: Waukegan, Illinois
Branches in Principal Cities
Pacific Coast Division: Standard Fence Co.
General Offices: Oakland, California

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Please mail me without obligation a copy of your book, "Fence—How to Choose It—How to Use It."

Name .....

Address .....

City ..... *State* .....
I am interested in fencing approximately ..... ft. of ☐ Industrial ☐ School ☐ Institutional ☐ Playground ☐ Residential ☐ Estate ☐ Cemetery property

Cyclone Fence
REG U.S. PAT. OFF.

Cyclone is not a "type" of fence, but is fence made exclusively by Cyclone Fence Company and identified by this trade-mark

United States Steel Corporation Subsidiary

The Most
Looked-Up-To Address
In Atlanta

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AT the Biltmore there are absent the sounds of trains, yelling newsboys, policemen's whistles and other traffic noises. There is peaceful, sleep-lulling quiet. Yet the Biltmore is only 5 minutes by motor car to the business district. Each room has outside exposure, bath and circulating ice water, one day laundry service without penalty of extra cost. Excellent cuisine, CONSIDERATE SERVICE. Reasonable rates. Let the Atlanta Biltmore be your Atlanta address!

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★
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"The South's Supreme Hotel"

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A SYMBOL

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PHILADELPHIA

OF HOSPITALITY

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600 ROOMS, Each With Bath
From $2.50 Single, $4.00 Double

HOTEL PENNSYLVANIA

39th and CHESTNUT STREETS
PHILADELPHIA

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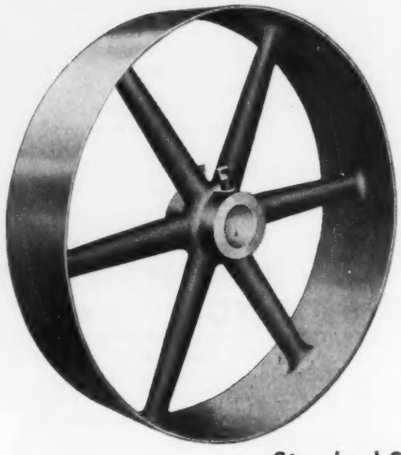

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Accurately Turned
Nicely Balanced

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Tight and Loose Pulleys—Clamp Hub Pulleys—Flange Pulleys
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Conveyor Pulleys—Ball Bearing Loose Pulleys
Friction Wheels—Fly Wheels—Balance Wheels

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"We have furnished more Complete and Partial Pulley and Shafting Equipment to Cotton Mills than any other manufacturer in the United States"

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WARP SIZING SPECIALISTS

SEYCO **SCIENTIFICALLY PREPARED TEXTILE CHEMICALS** SEYCO

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FINISHING SIZING

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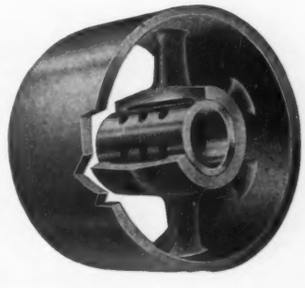
It will pay you to find out what Moccasin Bushings can do on your looms, twisters and loose pulleys.

Write for Descriptive Literature

MOCCASIN BUSHING COMPANY, CHATTANOOGA, TENN.

Brass and Bronze Castings of Every Description



MOCCASIN BUSHINGS

TRADING POST EXCHANGE

BUSINESS—EMPLOYMENT—EQUIPMENT—PROFESSIONAL CARDS—OPPORTUNITIES

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One of our clients, a New England manufacturer with a sales organization contacting textile mills throughout the world, desires to manufacture and sell accessory of merit, preferably covered by strong patents, and applicable to existing looms or other textile machinery. Strictest confidence observed.

William L. Fletcher, Inc.
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Washing—Drying—Finishing Machinery. Rebuilt like new. All sizes and makes. Guaranteed. Sacrifice Prices.

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The following worsted yarns

90 Lbs. 10/90—1/45 Meyers
270 Lbs. 20/80—1/45 Lawrence
80 Lbs. 50/50—1/50 French Worsted
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450 Lbs. 70/30—1/50 French Worsted

also these mercerized yarns

110 Lbs. 80/1 Elmore
90 Lbs. 120/2 Forrest
10% under market price

Weinerth Knitting & Machine Co.
8th and Spring Sts., Reading, Pa.

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Well established manufacturer selling direct to Textile plants offers exceptional opening for southern representative. Prefer man 30 to 35 years of age with technical training and practical mill experience, especially in finishing processes. Address Box 148, care COTTON, Grant Bldg., Atlanta, Ga.

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GREATER SAVINGS

Specializing in Textile Machinery for relocation

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ENGINEERING
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SAVING your time and expenses by offering only best and buying direct from source.

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60—Saco-Lowell 40" Cards
100—Saco-Pettee 40" Cards
100—Whitin 40" Cards
Drawing-Slubbers—Roving
TAPE DRIVE WHITIN SPINNING
TAPE DRIVE SACO-LOWELL TWISTERS
72"—81"—90"—99" SHEETING Looms
Double head Terrill Bobbin Strippers
Tolhurst 60" Extractors, individual Motor, 550 V.

WANTED

TAPE DRIVE SACO-LOWELL SPINNING, ROVING, BOBBIN STRIPPERS
200—C. & K. 4 x 1 Box Automatic Dobby Looms—40" cloth or 48" cloth.
Beams for Brandwood Beam dyeing monel metal 30" heads.
Model G Brownell Twisters

I BUY DIRECT FROM THE MILLS
INSPECTION FREE—MACHINERY GUARANTEED TO BE AS REPRESENTED

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Paul B. Eaton

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514 Munsey Bldg., Washington, D. C.
Former Member Examining Corps
U. S. Patent Office

"COTTON MILL MACHINERY CALCULATIONS"

EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitute one of the best references on the subject obtainable. The two volumes are illustrated with 45 diagrams and contain 21 reference tables. Strong, serviceable binding. You can secure them in conjunction with a three-year subscription to COTTON.

DO YOU WANT TO SELL IT?

Propably you, like many other mills, have some equipment which you have taken out or are thinking of taking out and replacing with new equipment.

Why not dispose of that second-hand machinery at a profit? COTTON has the largest circulation among the textile mills of the United States of any textile publication.

You Can Sell Your Second-Hand Equipment

to these mills through advertising in the "Trading Post Exchange of COTTON. Such advertising produces results at small cost—why not try it out and get that second-hand equipment off your hands in a profitable way? Tell us what you have for sale and let us insert an advertisement.

COTTON
GRANT BLDG. ATLANTA, GA.

Nickel-clad or Stainless Vessels

¶ Starch kettles, digestors, vats, and other vessels of this durable metal. Your designs or ours—"custom made" to order.

TANKS, TOWERS, BOILERS, KIERS, KETTLES STAND PIPES, SMOKE STACKS, AIR RECEIVERS, Etc.

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NEWNAN EST. 1854 GEORGIA
FABRICATORS OF STEEL AND ALLOY STEEL PLATE

AN UP-TO-DATE PRINTING PLANT

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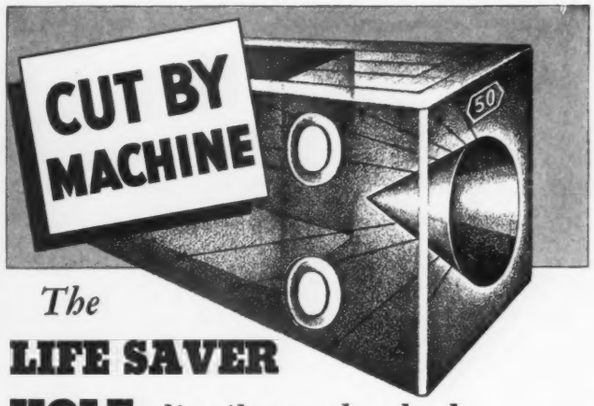
We are more than ready to answer any question that relates to your printing problems.

Write us and let us quote you on anything from a postal card to a full bound book.

The A. J. Showalter Co.
PRINTERS AND PUBLISHERS
DALTON GEORGIA



The **LIFE SAVER HOLE** *distributes the shock . . . . over the greatest area*

The shuttle **HAMMERS** *at one point . . . . so the picker soon breaks down*

Graton & Knight has patents on the machine-cut hole which distributes the shock of the shuttle point throughout the picker. All other picker holes have to be cut by hand, and no hand-cut hole can be accurate.

With the 50 Type Picker, neither the rim nor the bottom of the hole takes the blow. It is spread out over the whole area between these points—where the picker is strongest. That's why the picker "with the Life Saver Hole" lasts so much longer than other pickers.

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In some mills, loom fixers refuse any other kind. They know that 50 Type Pickers are easier and quicker to put on —fit better, last longer and reduce wear on other more expensive loom parts.

Call Your Western Union Office

. . . for the name of the nearest Graton & Knight distributor carrying 50 Type Pickers.

GRATON AND KNIGHT *Graton+Knight's*
50 TYPE PICKER
THE PICKER WITH THE LIFE SAVER HOLE
THE GRATON & KNIGHT CO.
WORCESTER, MASS.

2157

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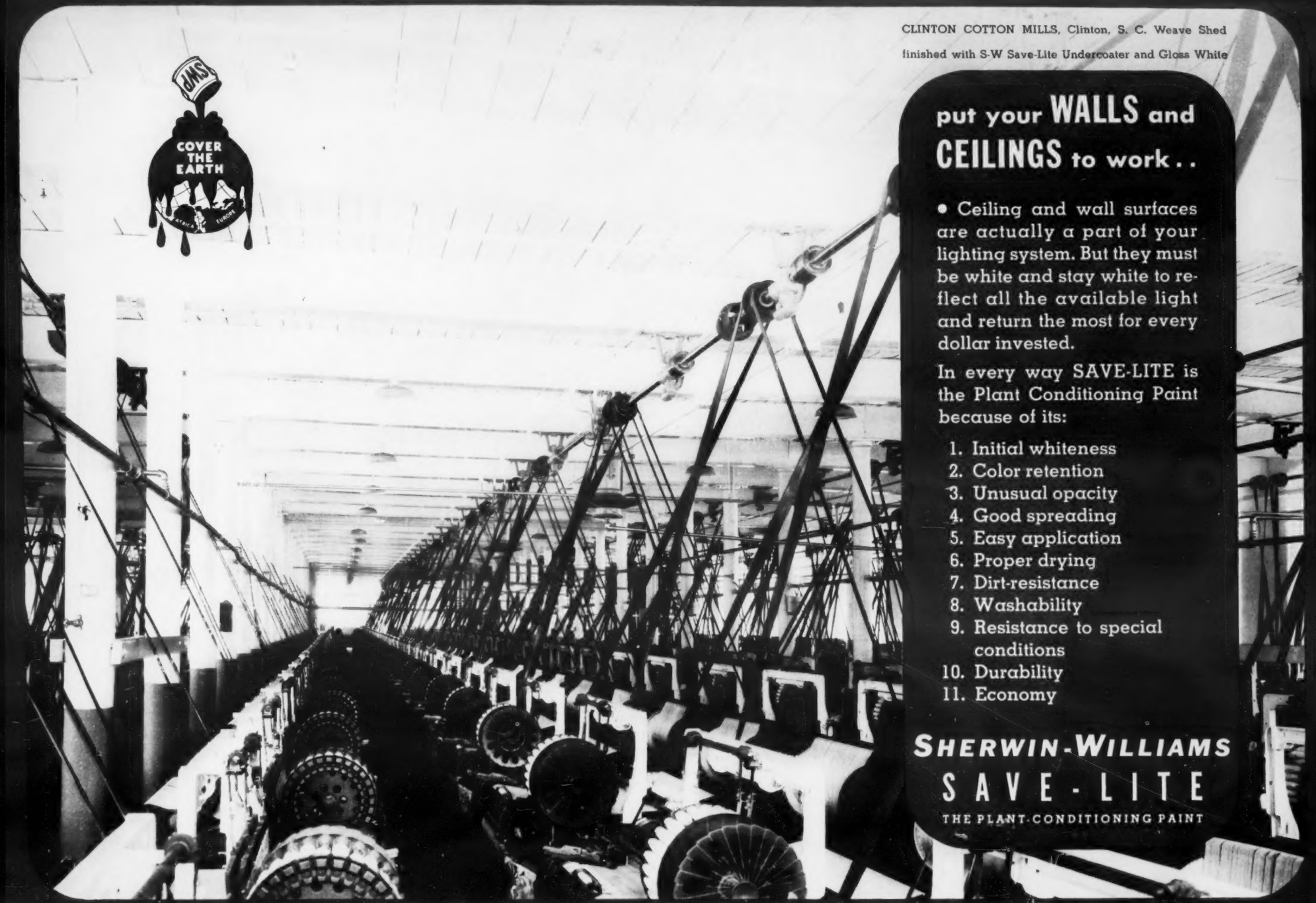
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